Gordon Institute of Business Science
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Dynamic capabilities and organisational resilience in unstable macroeconomic environments: A case study of manufacturing firms in Zimbabwe

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Abstract

The current literature conceptualises dynamic capabilities as the ability of managers *to sense* new trends, opportunities, and threats; *to seize* profitable opportunities while mitigating the risk of loss-making assets; and *to transform* tangible and intangible assets while continuously renewing the resource base of the firm. Little is known about dynamic capabilities in low income resource constrained contexts. The research aimed to uncover how dynamic capabilities influence organisational resilience and sustainability in Zimbabwe's unstable macroeconomic environment with persistent challenges. A two-case comparative qualitative study was used; 12 managers from two firms (six from each) in the manufacturing sector. A six-phase thematic analysis was carried out to analyse the data.

The study found that Zimbabwean managers had developed collective flexible adaptive action through high-order dynamic capabilities of evolutionary fitness and knowledge management. Managerial cognitive capacity and applied learning orientation culture, allowed them to sense, seize and transform the firm's resource base by tapping into and exploiting exogenous scientific know-how and technologies. The findings also show that evolutionary fitness and knowledge management mediate the relationship between dynamic capabilities and firm resilience and sustainability, while environmental dynamism moderates the relationship between dynamic capabilities and firm performance.

The study contributes to the understanding of how firms in unstable macroeconomic environments develop dynamic capabilities that lead to firm resilience and sustainability. It does this by deepening the dynamic capabilities theory and the resource-based view of the firm. It extends the resource-based view by emphasising how firms in resource-constrained environments can gain a competitive advantage over their competitors by managing their resources and assets.

***Keywords**: Dynamic capabilities, resilience, sensing, seizing, transforming*

Declaration

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

	02 November 2021
Student Name	**Date**

Table of Contents

List of Figures

List of Tables

List of Acronyms

Abbreviation	*Description*
CZI	Confederation of Zimbabwe Industries
DC	Dynamic Capabilities
DMP	Decision Making Processes
ESAP	Economic Structural Adjustment Program
FDA	Food and Drug Administration
G	Level of Groundedness
GDP	Gross Domestic Product
HODC	High Order Dynamic Capabilities
IFA	International Fertiliser Association
IFI	International Financial Institutions
ISPE	International Society for Pharmaceutical Engineering
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
RBV	Resource-Based View
RQ	Research Questions
SD	Strategic Document
WHO	World Health Organisation
WTO	World Trade Organisation

Chapter 1: Introduction to the Research Problem

1.1 Introduction

Unstable economic conditions can force managers in manufacturing firms to acquire a unique set of dynamic capabilities that enable them to overcome macroeconomic challenges (Fainshmidt, Wenger, Pezeshkan, & Mallon, 2019; Pal, Torstensson, & Mattila, 2014). Some firms operating in Zimbabwe's unstable macroeconomic environment seem to possess these acquired capabilities (Ngundu, Kupeta, & Ropi, 2018). This study seeks to explore how managers in firms have acquired dynamic capabilities and uncover whether they have developed firm resilience as a consequence (Manfield & Newey, 2019; Teece, 2007). The focus of this study arises from the fact that Zimbabwe's economic climate has remained uncertain and unstable since the socio-politically induced economic collapse of the early 2000s - an outcome of illegal farm occupations and land grabs (Chitiyo, Vines, & Vandome, 2016). The depth to which the economic crisis has prolonged arises from the latter, wherein the agricultural sector whose performance has never recovered was one of the key pillars of the economy and a sturdy base for the Zimbabwean manufacturing sector (Confederation of Zimbabwe Industries, 2020; Sibindi & Samuel, 2019).

The context in which manufacturing firms in Zimbabwe operate can be said to have contextual dynamism (Bitencourt, de Oliveira Santini, Ladeira, Santos, & Teixeira, 2020; Schilke, Hu, & Helfat, 2018) in which it is hard to say whether dynamic capabilities are inherent and at what level of analysis they are inherent within a firm (Fainshmidt, Pezeshkan, Lance Frazier, Nair, & Markowski, 2016; Ferreira, Coelho, & Moutinho, 2020). The level of analysis defines whether the dynamic capabilities employed are zero-order capabilities, lower-order capabilities, or high-order capabilities (Ferreira et al., 2020; Teece, 2018b). This context differs from one where firms operate with ordinary capabilities due to a stable environment where they can respond with ad hoc decision-making strategies regarding transitory economic shocks, new product developments, minor changes in the customer base, and non-changing organisational structures (Teece, 2018; Winter, 2003).

1.2 Background

Higher-order dynamic capabilities are highly patterned and learned behaviours. They allow organisations to seize opportunities, transform, renew, and redesign business structures in response to changes in the environment. These capabilities are essential for firm resilience in unstable macroeconomic environments (Kahn et al., 2018; Teece, Peteraf, & Leih, 2016). Zimbabwe's macroeconomic environment presents conditions of resource scarcity, hyper-

inflation, and inconsistency of fiscal and monetary policies that change abruptly, making it difficult for firms to work on long-term strategies. Organisational resilience has been defined as *"an organisation's ability to absorb strain and preserve or improve functioning, despite the presence of adversity"* (Kahn et al., 2018, p.509). Dynamic capabilities in decision-making allow firms to create competitive advantage by developing idiosyncratic and hard to imitate organisational strategic processes and resource structures that can absorb the strain despite the present reality imposed by environmental constraints (Barnard, Cuervo-Cazurra, & Manning, 2017; Teece, 2014). This strengthens the firm to avoid organisational inertia (Lee, Narula, & Hillemann, 2021) and to be able to withstand unstable conditions and environmental disruptions (DesJardine, Bansal, & Yang, 2019; Parker & Ameen, 2018).

The capacity for firms to possess decision-making dynamic capabilities allows collective dynamic capabilities such as sense-making and knowledge acquisition about the environment which are key in building firm resilience and protecting firm-specific assets and resources (Pal et al., 2014; Teece, Pisano, & Shuen, 1997). The consequences of poor decision-making and poor knowledge acquisition processes have long-term ramifications for firms operating in Zimbabwe's manufacturing sector. Sense-making and knowledge acquisition signal to firms when to exit unprofitable ventures or unbundle recombinant assets that are no longer providing a competitive advantage (Eisenhardt & Martin, 2000).

Manufacturing firms that succeed and endure in difficult dynamic environments successfully demonstrate higher-order dynamic capabilities such as the ability to recombine and reconfigure tangible and intangible firm-specific asset portfolios to gain competitive advantage (Lee et al., 2021; Zeng, Simpson, & Dang, 2017). Emerging market environments and more importantly low income economies have unique contexts where weak institutions exist, resulting in poor information exchange (Zeng et al., 2017). This creates impediments for companies operating in the manufacturing sector which can fail to acquire the right knowledge (Lee et al., 2021). The knowledge should be at the disposal of the firm so that it can make the right decisions in asset portfolio structures and resource allocation to profitable ventures.

In periods of unstable macroeconomic conditions and rapid technological change, large manufacturing companies thus find it difficult to re-engineer and change their organisational structures due to the size of their resources and asset bases (Girod & Whittington, 2017; Teece, 2018). Organisational structures such as factory set-ups, plant designs, and logistics do not change overnight. No "out-of-the-box solutions" and improvisation can build firm-specific dynamic capabilities (Teece, 2018; Winter, 2003). Organisational dynamic capabilities require many iterations to make precision adjustments to a firm's physical structures and the renewal of its resources and asset base (Lee et al., 2021; Teece, 2018).

The ability of Zimbabwean firms to acquire high-order dynamic capabilities means that they will be able to cope with the unstable and unpredictable macroeconomic conditions they are confronted with by building resilience that in turn contributes to the sustainability of the business (Lee et al., 2021). First, firms need high-order dynamic capabilities in decision-making so that they can shift from trajectories that have become unprofitable. This requires skills that allow them to assess the best asset combinations and the most appropriate pathways for portfolio integration (Eisenhardt & Martin, 2000; Lee et al., 2021). Secondly, to avoid the inertia of resource rigidity, a firm needs to respond quickly and make decisions to reallocate resources to meet challenging macroeconomic events (Parker & Ameen, 2018). Finally, managers of organisations should guard against complacency and living in the security of past achievements which prevents them from learning, updating core competencies, and acquiring the dynamic capabilities that prepare firms to sense, seize and transform their asset portfolios (Teece et al., 1997).

The organisational management literature examines two views. One view from Teece and associates is that dynamic capabilities can be so tacit, complex, and idiosyncratic that a manufacturing entity may not be able to evaluate and cognitively explain how it acquired them. These capabilities are therefore not replicated and cannot be codified nor taught in the normal course of business (Nayak, Chia, & Canales, 2020; Teece, 2014). In contrast, Eisenhardt and colleagues argue that in highly unstable and dynamic environments, organisational dynamic capabilities required for superior firm performance may be simple experimental and iterative processes that can be learned by managers of the manufacturing entity and substituted over time (Eisenhardt & Martin, 2000).

1.2.1 Research Context

When one considers Zimbabwe's business environment and the firms operating therein one can only assume that firms have acquired higher-order dynamic capabilities that developed because of interactions with the unstable macroeconomic environment (Magweva & Mbudaya, 2021; Sibindi & Samuel, 2019). The consequences of Zimbabwe's failed land redistribution programme of the early 2000s and subsequent failure to manage the economy have left the country with no international financial support (Bank, 2018). Zimbabwe has been battling the devastating effects of collapsed macroeconomic fundamentals, making it difficult for businesses to operate in a "business as usual" scenario (Magweva & Mbudaya, 2021; Sibindi & Samuel, 2019). Macroeconomic fundamentals are economic factors that are influenced by the political, social, economic, and technological changes that have an impact on firm profitability.

In an Organisation for Economic Co-operation and Development (OECD) study on 431 International Monetary Fund (IMF) interventions between 1971 and 2011, Zimbabwe was shown to be one of six countries that experienced the three-pronged phenomena - the combination of currency, debt, and sudden stop crisis (Claessens, Stijn, & Kose, 2013). Sudden stop is when International Financial Institutions (IFIs) suddenly stop assisting a defaulting member's economic policies.

Zimbabwe's unique setting makes firms operating in its highly unstable environment interesting case studies (Confederation of Zimbabwe Industries, 2020; Sibindi & Samuel, 2019). These firms have circumstances that deviate from the ordinary capability context. These ordinary capabilities are entrenched in routines, processes, and best practice standards within which firms maintain the "status quo" in normal business environments (Lee et al., 2021). In Zimbabwe, firms have to develop core competencies that are unique to remain competitive and resilient (Sibindi & Samuel, 2019).

The focus on the manufacturing sector is motivated by the role that it plays in the economy. The sector is characterised by strong backward linkages into both the primary and secondary sectors of the economy, through its demand for inputs. It also has strong forward linkages with the tertiary sector through the various services it demands, such as financial and marketing services. These linkages mean that anything that impacts the sector will have ripple effects on the rest of the economy. As a result, understanding the high-order dynamic capabilities of manufacturing firms and their contribution to organisational resilience is essential for both business and economic strategy in a country like Zimbabwe (Abreha, Lartey, Mengistae, Owusu, & Zeufack, 2020).

1.2.2 Zimbabwe's Manufacturing Sector

De-industrialisation is what characterised the economic climate in Zimbabwe during the 2000s. It resulted in low capacity utilisation and reduced production output (Damiyano, Muchabaiwa, Mushanyuri, & Chikomba, 2012). Some manufacturing companies that weathered the economic crisis changed manufacturing business models to importers of finished goods from neighbouring countries such as South Africa and Zambia (Confederation of Zimbabwe Industries, 2021; Damiyano et al., 2012). The economic de-industrialisation was reflected in the country's capacity utilisation as a percentage of GDP, decreasing from a peak of 57.20% to fall below the 50.00% mark with periods of cyclical volatility, see Figure 1 below.

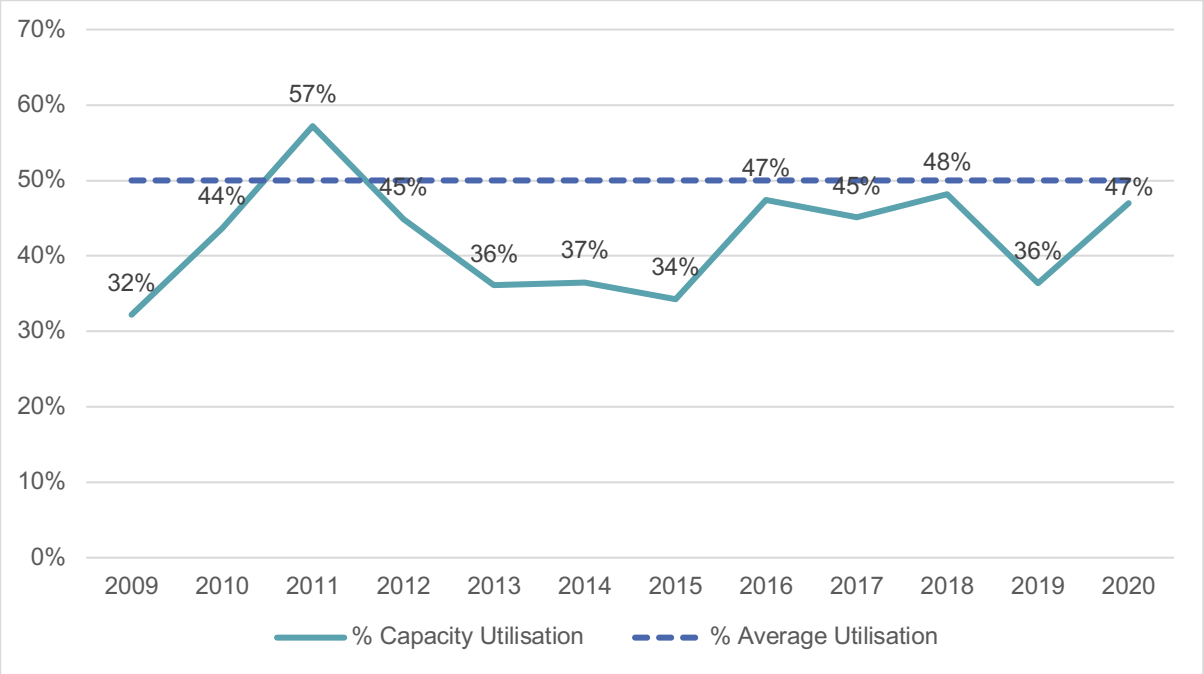


Figure 1: Capacity utilisation in 2020 as a percentage of GDP

Note: Confederation of Zimbabwe Industries – State of the manufacturing survey report for 2020

Source: CZI (2021)

Figure 1 also shows the sectoral capacity utilisation by sector with the manufacturing sector's capacity utilisation at 47.00% in 2020. Looking back, between 1980 and 1990, manufacturing output was 20.35% of GDP (see Table 1 below), with a downward trend which was observed during the World Bank and International Monetary Fund (IMF) backed Economic Structural Adjustment Program (ESAP) (Dube, 2011).

Table 1: Zimbabwe manufacturing performance (1980 - 2006)

Manufacturing Indicator	***1980-1990***	***1991-2000***	***2001-2006***
Manufacturing Value added average growth %	4.6	- 0.7	- 7.4
Manufacturing employment growth %	3.0	- 0.7	- 5.3
Manufacturing as percentage of GDP %	20.4	17.7	15.0

Source: Dube (2011)

The manufacturing sector did not respond well to the IMF programme and the following years led the country into policy decisions that led to the three-pronged economic challenge and sudden stop of bilateral support by international financial institutions discussed in section 1.3 (Stijn Claessens & Kose, 2013). Below Table 2 shows that manufacturing output as a percentage of GDP declined over the years to -8.7% in 2019 and closed the year at -9.6% in

2020 (Confederation of Zimbabwe Industries (CZI), 2021). Projections for 2021 are optimistic given the low base the sector is coming from. This optimism was reported in the 2020 manufacturing sector survey, as a consequence of the output stimulated by the COVID-19 pandemic global lockdown (CZI, 2021) which saw increased domestic demand for foodstuffs and other manufactured goods.

Table 2: Sectoral Contribution as a Percentage of GDP (2019-2021)

Description	***2019***	***2020***	***Forecast 2021***
Overall GDP by sector	***-6.0***	***-4.0***	***7.4***
Agriculture and Forestry	-17.8	-0.2	11.3
Mining and quarry	-12.4	-4.7	11.0
Manufacturing	-8.7	-9.6	6.5
Electricity and water	-19.2	-7.9	18.8
Construction	-13.9	-11.4	7.2
Distribution	-8.2	-7.5	5.7
Transport and communication	12.9	3.2	7.1
Finance and insurance	-6.1	-7.1	7.2
Government services	1.4	-2.1	6.2
Other services	-2.6	-2.1	4.3

Note: Confederation of Zimbabwe Industries – State of the manufacturing survey report for 2020

Source: CZI (2021)

Another striking metric is the loss of employment that was experienced in the manufacturing sector compared to total employment across sectors, excluding the agricultural sector (CZI, 2021). Figure 2 shows the fall in jobs in the manufacturing sector from 140,000 in 2009 to about 100,000 in 2018, compared to the jobs added across sectors from 700,000 in 2009 to 850,000 in 2018.

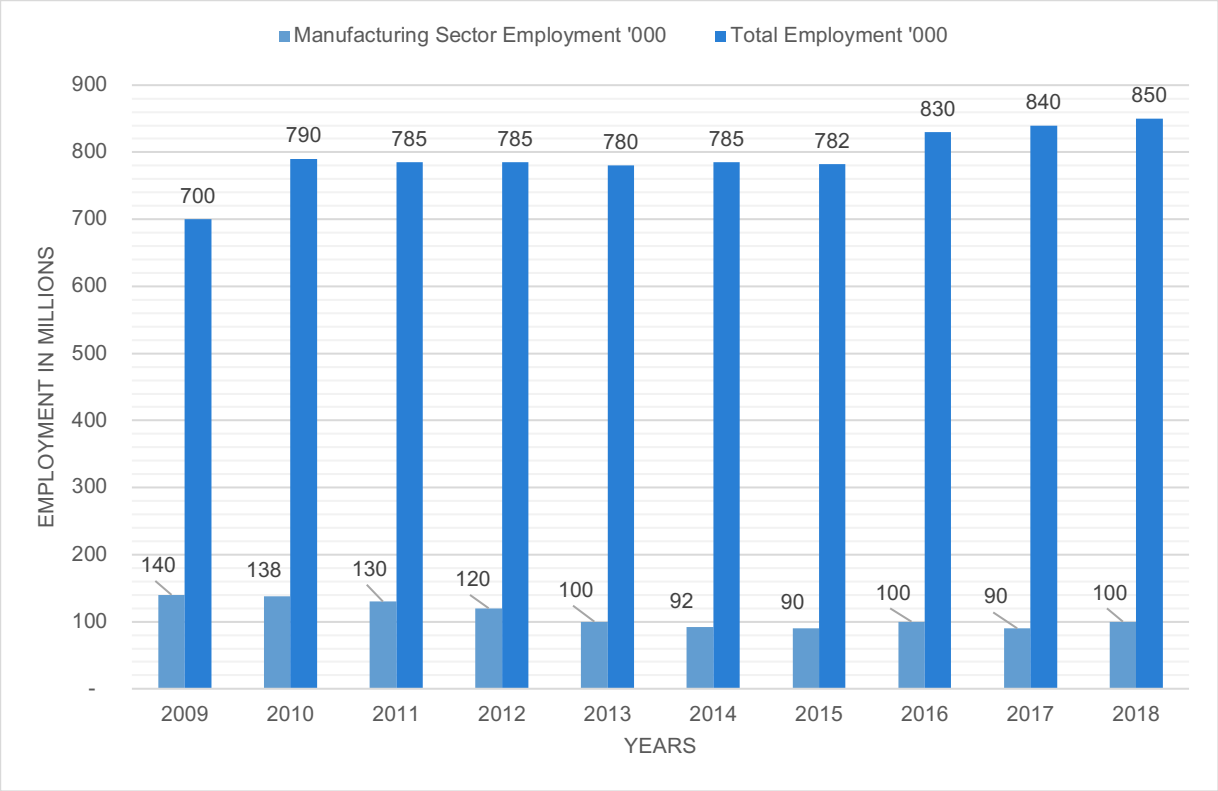


Figure 2: Manufacturing sector employment compared to total employment

Note: Confederation of Zimbabwe Industries – State of the manufacturing survey report for 2020

Source: CZI (2021)

Against this backdrop, the manufacturing sector has companies that have managed to navigate the unstable macroeconomic challenges and continued to show resilience and survival strength.

1.3 Purpose of the Study

Using a dynamic capability framework, *à la* Teece, this study investigates whether firms that have survived the negative macroeconomic environment in Zimbabwe have acquired higher-order dynamic capabilities due to the in situ macro-economic challenges. The study seeks to broaden the understanding of how manufacturing firms in Zimbabwe have developed dynamic capabilities that have built firm resilience in an unstable macroeconomic environment (Bocken & Geradts, 2020; Teece et al., 2016; Winter, 2003). It is important to understand how firm managers co-create, restructure and transform their internal competencies to address the challenges of a complex environment (Girod & Whittington, 2017; Teece et al., 1997). This will contribute to the body of knowledge on dynamic capabilities by assessing how non-cognitive collective adaptive actions influence dynamic decision-making capabilities in these organisations (Nayak et al., 2020).

1.4 Research Objectives

The objectives of this research are to;

i. To describe how the dynamic capabilities of sense-making and seizing opportunities are enacted in an organisation.
ii. To determine how managers in manufacturing firms in Zimbabwe transform organisational assets through reconfiguration of resource portfolios.
iii. To ascertain how the collective adaptive actions of managers in firms inform their knowledge acquisition and influence their decision-making.
iv. To determine whether manufacturing firms in Zimbabwe have developed high order dynamic capabilities that contribute to resilience in an unstable macroeconomic environment.

1.5 Research questions

The overarching research question that will guide this study is;

How do dynamic capabilities influence organisational resilience in unstable macroeconomic environments with persistent challenges over a long period?

To uncover insights into the deployment and workings of dynamic capabilities in Zimbabwean manufacturing firms, the study will explore the following questions:

i. How do managers in manufacturing firms identify opportunities that inform decision-making and give rise to firm performance in the macroeconomic environment?
ii. What decision criteria inform the restructuring of the organisation's resources to achieve strategic business objectives?
iii. In what ways is information assimilation a key capability of managers operating in unstable macroeconomic environments?
iv. How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to firm resilience?

1.6 Significance of the Study

1.6.1 Theoretical Contribution

The study contributes to debates in the dynamic capabilities and the resource-based view of the firm literature. It addresses the call to find relationships between the actions of managers in manufacturing firms and how they influence the firm in renewing itself (Conboy, Mikalef, Dennehy, & Krogstie, 2020; Helfat & Peteraf, 2015). One of the criticisms of the dynamic capabilities literature is that it places a disproportionate focus on the dynamic capabilities of

an organisation while ignoring the impact that managers' cognitive actions have on the firm (Helfat & Peteraf, 2015; Schilke et al., 2018). To address this gap, this study explored how dynamic capabilities are also an outcome of the lived experiences of managers in firms operating in unstable macroeconomic environments in a low-income country. It assessed insights of the lived experiences of managers in manufacturing and their importance in generating idiosyncratic cognitive and non-cognitive knowledge that support's a firm's orientation, whether heterogeneous or homogeneous. The firm's heterogeneity is a result of the behaviours of its managers which are influenced by the context in which these lived experiences occur (Nayak et al., 2020). Furthermore, while the number of studies on dynamic capabilities in developing countries is steadily increasing, by focusing on Zimbabwe, a country with a protracted socio-political economic crisis, the study also deepens the body of knowledge on dynamic capabilities in contexts outside Western countries, thereby contributing, deductively, to theory building and testing. It does this by finding key factors that influence firm resilience and by testing propositions in the literature in a low-income country setting.

1.6.2 Management Contribution

The study will contribute to management practice by adding to the currently limited empirical evidence on higher-order dynamic capabilities of firms in the Zimbabwean manufacturing sector that faces persistent macroeconomic constraints and has endured an unstable business climate (Barnard et al., 2017). The need to shed light on how firms survive in these contexts is also echoed by (Barnard et al., 2017, p. 469) who concluded that *"understanding how those firms navigated a very turbulent environment can shed light on fundamentals in management…"*. The findings of this study will allow strategy managers and practitioners to understand decision-making process that respond to cognitive adaptive actions, for example, with respect to firm asset renewal and configuration. They will also inform the decision-making processes that influence managers to enact adaptive actions of the firms in sensing and seizing opportunities that arise in an environment that has many unknowns. It is hoped that the findings will not only influence decision-making processes of firms in Zimbabwe, but will also have a bearing on other firms in similar contexts that can benefit from understanding the relationship between firm resilience and higher-order dynamic capabilities.

1.7 Structure of the document

The structure of the discussion in the following chapters will start with the literature review which looks at the depth of the dynamic capability literature and the different contexts in which it has been investigated by scholars. Chapter 2 is a comprehensive literature review that looks

at what dynamic capabilities are and defines the three dimensions of dynamic capabilities - sensing, seizing, and transforming (Schilke et al., 2018). The review then looks at how these capabilities are deployed by managers of firms in decision-making processes and asset and resource recombination. The chapter concludes with a discussion on the gap in management literature that this study seeks to fill. Chapter 3 is a presentation of the research question: *"How do dynamic capabilities influence organisational resilience in unstable macroeconomic environments with persistent challenges over a long time?"* A brief discussion of the sub-questions that will investigate the answers to the main research question is also included. Chapter 4 describes the methodology used in the study and the challenges the researcher encountered during the data gathering process. In Chapter 5, the research findings are presented and discussed leading into a discussion analysis in Chapter 6. Chapter 7 will close off the study with conclusions drawn from the analysis of findings and the recommendations to management and practitioners.

Chapter 2: Literature Review

2.1 Introduction

This chapter provides a discussion of the literature and arguments in the resource-based view (RBV) and dynamic capabilities theories. These two theories have provided the domain with empirical evidence, frameworks, and models that have investigated and defined the dimensions of the resource-based view of firm performance and the dynamic capabilities that support superior firm performance in dynamic environments (Eisenhardt & Martin, 2000; Teece et al., 1997; Teece, Pisano, & Shuen, 2003; Winter, 2003). Section 2.2 will discuss how dynamic capabilities theory extends the resource-based view theory. The literature is vast and rich with definitions and antecedents of firm-level dynamic capabilities yet much work still needs to be done to further analyse and bring this vast knowledge together into a solid and cohesive framework (Schilke et al., 2018). There is also the acknowledgement that the literature of dynamic capabilities is advancing in two main directions: (1) that dynamic capabilities contribute to performance and (2) dynamic capabilities are more observable in contexts of dynamic change (Fainshmidt et al., 2016).

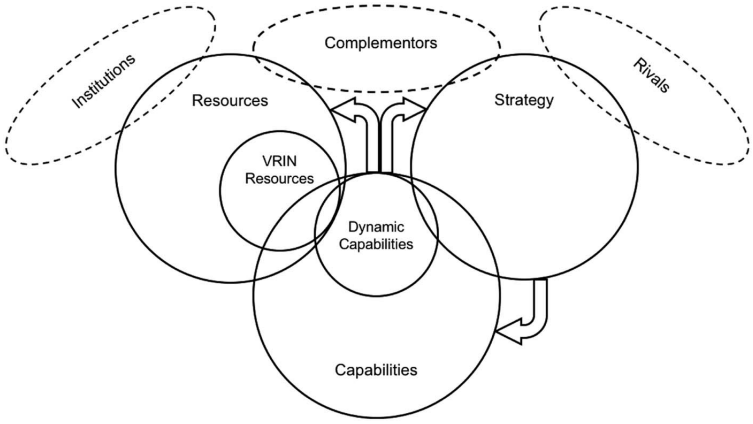
This literature review will explore the dynamic capabilities theory as it pertains to the performance of manufacturing entities in unstable macroeconomic environments. Section 2.3 will discuss what dynamic capabilities are, as first defined by Teece and further ranked by Winter (Teece, 2007; Teece et al., 1997; Winter, 2003), and the dynamic capabilities literature through the lens of some of the major proponents who have advanced the field of dynamic capabilities. Section 2.4 will define the dimensions of the dynamic capabilities (sensing, seizing, and reconfiguration) and make a critical assessment of how they are deployed at the firm level and how they are impacted by the context in which the firm operates.

Most of the literature concentrated on defining dynamic capabilities from the perspective of firms in stable macroeconomic environments but not much until recently had been said about unstable macroeconomic environments (Manfield & Newey, 2019; Teece, 2018b). Section 2.5 will explore the decision-making processes that are enacted by managers in manufacturing entities when supporting the dynamic capabilities of sensing, seizing, and transformation to enhance firm performance and long-term resilience (Nayak et al., 2020; Teece, 2007; Teece et al., 1997). In Section 2.6 the empirical evidence on how dynamic capabilities influence firm performance through managerial decision-making that impacts the recombination of assets and the restructuring of the firm's tangible and intangible resources is presented (Girod & Whittington, 2017; Teece, 2007). Lastly, in Section 2.7, we argue based on evidence on how a firm can deploy dynamic capabilities that support the development of resilience as a firm

capability that enhances the firm's ability to survive in unstable macroeconomic environments (Fainshmidt, Wenger, Pezeshkan, & Mallon, 2019; Manfield & Newey, 2019; Teece, 2018a).

2.2 Theoretical Framework

The resource-based view of the firm was underpinned by strategic models such as Porter's Five Forces Model (Porter, 1985). Porter's model looks at firm-specific resources and the competencies that a firm possesses (Lee, Narula, & Hillemann, 2021; Miller & Friesen, 1986; Teece, Pisano, & Shuen, 1997) and how these resources and competencies are combined and employed as firm-specific attributes that are "valuable, rare, imperfectly imitable and non-substitutable" giving rise to the firm's heterogeneous nature within the competitive environment (Teece, 2018b). In dissecting the competitive nature of firms, the capabilities and competencies that create competitive advantage, Teece et al., (1997), identified the three dimensions of dynamic capabilities that enable long-term sustainable competitive advantage. Teece postulated that it is not enough to have inimitable resources and firm competencies, because the static nature of the resource-based view of the firm, ignores the dynamic nature of the environment in which the firm operates (Teece, 2007). Others have complimented Teece's work and argued that firm resources and assets require constant, continuous, and incremental improvements for the firm to achieve superior long-term performance (Schilke et al., 2018; Teece, 2018b). The authors look at the multivariate factors that are at play for the firm to be able to develop and deploy dynamic capabilities. The following framework Figure 3 gives an overview of the system in which the firm is operating and the various factors that may imoact or influence that firm's decision-making regarding deployment of its resources.



THE KEY ELEMENTS OF THE DYNAMIC CAPABILITIES FRAMEWORK
NOTE: A DASHED BORDER INDICATES ELEMENTS THAT ARE EXTERNAL TO THE FIRM. ARROWS REPRESENT MAJOR INFLUENCE.
VRIN = VALUABLE, RARE, IMPERFECTLY IMITABLE, AND NON-SUBSTITUTABLE

Figure 3: The Key Elements of the Dynamic Capabilities Frameworks

Note: The framework was adapted from Teece, D. (2018, p. 363). Dynamic capabilities as (workable) management systems theory.

The dimensions of sensing, seizing, and transformation anchor the firm's ability to recombine and reconfigure (Girod & Whittington, 2017) its portfolio of assets and resources (including human resources) and enhance core competencies that the firm has acquired (Teece et al., 1997). Furthermore, dynamic capabilities tend to be heterogeneous and idiosyncratic, allowing firms to combine existing knowledge resources with new knowledge (Teece, 2014).

2.3 What are Dynamic Capabilities?

Building on the work of Teece et al., (1997), scholars have further decomposed the dimensions of dynamic capabilities. Winter, (2003) deliberates on the concept and states that dynamic capabilities are higher-order capabilities that are distinct from ordinary capabilities or zero-order capabilities. They seek to "extend, modify or create" ordinary capabilities in a process of renewal. However, scholars seem to question whether these dynamic capabilities as posited by Nayak et al., (2020); Teece et al., (1997); Teece, Pisano, & Shuen, (2003) are truly idiosyncratic, tacit, and complex routines that are difficult to imitate, especially in environments of uncertainty. Thus, these scholars have suggested the view that dynamic capabilities are highly routine, repetitive, and patterned behaviours and processes that a firm perfects over time to deliver value in uncertain and dynamic environments (Winter, 2003). This process of creating vale over time and evolving through cycles of renewal is what was referred to by (Teece, 2018b; Nayak et al., 2020) as evolutionary fitness. Evolutionary fitness allows a firm to evolve over time by renewing its assets and recourse base continuously. In contrast, Eisenhardt & Martin, (2000), dispute that in highly unstable and dynamic environments, the dynamic capabilities required for competitive advantage are simple experimental and iterative processes. They can be substituted because they are "best practices" and have greater homogeneity than has been implied by the proponents of firm heterogeneity. Investigating the view that simple best practice routines support dynamic capabilities in highly dynamic and uncertain environments was found to be the case in environments where there was resource scarcity (Fainshmidt et al., 2016) and in situations of firm collapse and subsequent recovery (Manfield & Newey, 2019).

The main contrasting views in dynamic capabilities literature show that though the concept has been well received in academia and is well understood (Fainshmidt & Frazier, 2017), the construct remains debatable and certain aspects of it are understudied (Nayak et al., 2020; Schilke et al., 2018). In the many studies that explored dynamic capabilities, the concept was applied to organisational outcomes such as competitive advantage and superior performance (Teece et al., 2003; Winter, 2003), strategy development and implementation (Teece et al., 2016), business model innovation and redesign (Bocken & Geradts, 2020; Teece, 2014, 2018), operations management (Conboy et al., 2020; Roscoe, Cousins, & Handfield, 2019),

information systems innovation (Teece, 2020), entrepreneurship (Ferreira et al., 2020) and business restructuring (Girod & Whittington, 2017; Lee et al., 2021). However, the foundation for dynamic capabilities literature is the agreement that the firm requires dynamic capabilities to adapt to change and transform, to be able to renew itself incrementally over time in a manner that is favourable to the business and its stakeholders (Pandza & Thorpe, 2009; Teece, 2020). Dynamic capabilities must also present unfavourable barriers that prevent competitors from imitating the business' competitive advantage (Lee et al., 2021; Teece et al., 2016).

2.3.1 Higher-order Capabilities

To understand how companies develop firm-specific superior competencies, Winter (2003) highlights that dynamic capabilities are higher-order capabilities that are a patterned set of collective actions and learned routines that a firm's management must enact to exploit current resources and explore new ways to transform the organisation's resource base and gain competitive advantage (Ferreira et al., 2020). In contrast, there are zero-order capabilities that maintain the status quo of the firm and maximise exploiting current resources (Ferreira et al., 2020). The author goes on to suggest that a firm can also possess second-order capabilities - the capabilities that transform the first-order capabilities defined by Winter.

Organisations that are exceptional at harnessing the entrepreneurial spirit and firm-specific higher-order capabilities (Ferreira et al., 2020; Teece, 2018a) can navigate complex environments by sensing future trends through environmental scanning, seizing opportunities, and reconfiguring resources to drive firm strategies through the changing environment (Bocken & Geradts, 2020; Teece, 2018). Similarly, firms that can survive and build sustainability in the ever-changing business environment demonstrate a unique ability to further modify and extend firm-specific asset combinations to achieve their business and strategic objectives (Girod & Whittington, 2017; Lee et al., 2021; Zeng et al., 2017). Thus, to gain a deeper understanding of the dimensions of dynamic capabilities, a discursive description of the typology of sensing, seizing, and transforming is offered.

2.4 Dimensions of Dynamic Capabilities

2.4.1 Introduction

Firms that harness the power of dynamic capabilities can respond to rapidly changing environments and adapt by creating and shaping industries through innovation and collaboration (Teece, 2007). Managers within these firms can formulate detailed strategies that are relevant and select priorities that are to be adopted to strengthen the firm's

performance and build resilience in rapidly changing technological industries, unstable and uncertain macroeconomic environments (Fainshmidt et al., 2016; Ferreira et al., 2020; Teece, 2007). The framework of dynamic capabilities focuses on dimensions that are supported by strategic resources and managerial capabilities, which facilitate the firm's ability to reconfigure itself and continuously change to sustain growth and build resilience. These dimensions are further discussed and explored in the following section.

2.4.2 Sensing Capability

Sensing is a key dimension in the dynamic capabilities framework. It is through the sensing capability that firms can identify the opportunities that emerge in the operating environment (Fainshmidt et al., 2016). Although most emerging trajectories are hard to discern, the sensing capability is all about "*shaping new opportunities*" and *"is very much a scanning, creation, learning, and interpretive activity*" (Teece, 2007, p. 1322). Conboy et al., (2020) delineate micro-foundations of sensing and presents two dimensions of the processes that are required to gather information which are sensing customer sentiments and customer segments; and evaluating internal and external sensing processes which strengthen the knowledge sharing capacity of the firm. Knowledge accumulation capacity is essential when managers need to evaluate the viability of making investment decisions about the firm's resources and strategic initiatives (Helfat & Peteraf, 2015; Manfield & Newey, 2019; Schilke et al., 2018). The act of sensing also involves environmental scanning and gaining insights into trends and patterns while evaluating the technological changes happening in the industry (Fainshmidt et al., 2016; Teece et al., 1997) that managers can explore for purposes of seizing the right opportunities for the firm.

2.4.3 Seizing Capability

Seizing involves the responsiveness the firm has to opportunities and threats to act quickly and restructure or renew itself (Teece, 2018a). In the seizing capability, managers will reach into the knowledge accumulated toolbox to collaborate across the firm and engage in knowledge sharing activities (Pandza & Thorpe, 2009). These activities lead to assessing the firm's need for asset restructuring and recombination (Girod & Whittington, 2017; Teece, 2020). In other instances, recombination results in asset optimisation. This is complementary to dynamic capabilities and another way managers will seek to exploit existing capacity, improve on efficiencies and explore new ventures (Fainshmidt et al., 2016).

2.4.4 Transformation and Reconfiguration

Transforming is all about restructuring new ventures in product development, business model innovations, and maintaining alignment between strategic initiatives through *"the successful*

entification and calibration of technological and market opportunities, the judicious selection of technologies and product attributes and the design of business models" (Teece et al., 1997). How firms build and adapt their resources to take advantage of market opportunities and anticipate technological changes requires managers to invest in deploying higher-order dynamic capabilities. These are more beneficial for firm survival than ordinary capabilities in high dynamic environments (Ferreira et al., 2020).

2.4.5 Environmental Context and Dynamic Capabilities

Literature shows that the dimensions of dynamic capabilities require a human cognitive dimension that influences the processes that trigger sensing capabilities (Helfat & Peteraf, 2015). The managers' decision-making role leads to seizing of opportunities that are available to the firm or mitigating risks and threats that would disrupt strategic objectives (Pandza & Thorpe, 2009). When it comes to transforming the firm's assets, the decisions that are made can have either a positive or negative outcome depending on the strategic direction that managers take. This means that a decision is made whether the firm should pursue a differentiated strategy or a low-cost strategy in unstable macroeconomic environments with persistent challenges (Fainshmidt et al., 2019).

Unstable macroeconomic environments, which will also be referenced as environmental dynamism (Fainshmidt et al., 2019), are contexts that have resource constraints and thus present unique operating conditions for firms to navigate (Yuan, Xue, & He, 2021). This requires managers to deploy capabilities that are different from those observable in firms operating in stable macroeconomic environments (Fainshmidt et al., 2019). Fainshmidt et al., (2019) emphasise the importance of strategic fit and alignment while Teece (2018b) proposes that managers need to develop flexible and resilient capabilities that respond to market dynamism and disruptions with speed. This proposition to managers was then taken up by Manfield & Newey (2019), who coined the term "dynamic resilience capability (p. 24)" to try to decompose how and when a firm should deploy dynamic resilience capabilities. The authors also found that in unstable macroeconomic environments, dynamic capabilities are based on heuristics of problem-solving, the need to be flexible and adaptive which influences better strategic and performance outcomes for the firm (Bogers, Chesbrough, Heaton, & Teece, 2019; Helfat & Peteraf, 2015). The resource-based view looks at how managers use the firm's resource base to transform and recombine assets to achieve strategic and performance outcomes (Manfield & Newey, 2019). Managers in unstable macroeconomic environments must develop specific exploratory learning capabilities to navigate their environment and transform and recombine assets (Yuan et al., 2021). As such, this research will look at the

processes of how manufacturing firms in unstable microeconomic environments have built dynamic resilient capability as a sub-construct of dynamic capabilities.

2.5 Dynamic Capabilities Processes and Firm Reconfiguration

2.5.1 Introduction

Dynamic capabilities are observable as highly patterned and developed mechanisms used by managers to recombine and reconfigure resources that evolve with organisational growth to generate new sources of competitive advantage (Eisenhardt & Martin, 2000). Managers need to learn to lead the firm to evolve and "*reconfigure capabilities to drive renewal and to become more resilient in the face of hostile conditions*" (Manfield & Newey, 2019, p. 2). On the other hand, some scholars view dynamic capabilities as vague repetitions of routines that cannot be taught or transferred operationally (Teece, 2018; Teece et al., 1997), yet other studies have produced evidence that specific patterned behaviours and routines can be replicated within the organisations (Eisenhardt & Martin, 2000). Therefore, dynamic capabilities can enable a firm to bring about change within its markets given its process capability to utilise resources when combining and releasing assets. Dynamic capabilities are therefore the organisation's ability to achieve new resource structures as markets move and change in dynamic ways (Eisenhardt & Martin 2000).

These decision-making processes impact the firm’s resource allocation and product development routines. Decision-making is critical for managers to collectively enact routines and activities that are informed by their expert know-how and ability to sense changes in the environment (Akpan, Johnny, & Sylva, 2021; Eisenhardt & Martin, 2000; Teece, 2018). Managers can amalgamate various business functions, asset classes, and human resource expertise to make choices and create innovative products and services that transform the organisation towards competitive advantage and firm resilience (Eisenhardt & Martin, 2000; Teece, 2018; Williams, Gruber, Sutcliffe, Shepherd, & Zhao, 2017; Winter, 2003).

2.5.2 Processes and Reconfigurations

Another way of conceptualising dynamic capabilities is the reconfiguration of internal resources which combine to create competitive advantages. Given strategic complexities and environmental changes, managers create product innovations and novelties through routines of copying and replication of ideas within cross-functional teams. This is an antecedent of research and development firms (Akpan et al., 2021; Eisenhardt & Martin, 2000; Williams et al., 2017). In their repertoire of capabilities, managers employ such routines as knowledge brokering and cross-function collaborations to enable synergies that allow the redistribution

and deployment of scarce resources. Firms such as Toyota that excel in the integration of processing, decision-making, and product development successfully created a competitive advantage through harnessing internal competencies and industrial knowledge brokerage (Eisenhardt & Martin, 2000; Lee et al., 2021).

The processes of knowledge brokering have been further delineated into two mainframes that help the sense-making of managers through intentional knowledge acquisition routines and deep learning (Yuan et al., 2021). The two frames are knowledge accumulation and knowledge sharing (Conboy et al., 2020; Pandza & Thorpe, 2009). Teece (2020), referred to the knowledge function within management teams as knowledge management capacity which enhances decision-making and the ability of managers to integrate and share the knowledge accumulated through sense-making of the internal and external environment. Managers, therefore, have the task of knowledge sharing to enhance the firm's capacity to transform and reconfigure resources (Pandza & Thorpe, 2009). Managers will use their cognitive abilities to disseminate the knowledge they have acquired to the wider employee cohort and inspire employees to collaborate as cross-functional teams. A manager's cognitive capability is understood as combining mental processes and structured mental frames of perception, attention, pattern recognition, and interpretation of data (Helfat & Peteraf, 2015). This capability allows managers to effectively communicate with their teams and inspire the firm to avoid organisational inertia and failure.

Furthermore, dynamic capabilities can include processes that enhance a firm's ability to generate knowledge. This directs the firm's decisions on strategic initiatives (Eisenhardt & Martin, 2000). Firms that develop dynamic capabilities in generating new knowledge form alliances and collaborations that bring intellectual property, patents, and engineering know-how to increase organisational outcomes for superior product design and technological development (Eisenhardt & Martin, 2000; Lee et al., 2021). Pharmaceutical companies develop extensive knowledge sharing and cross-functional team routines to enable efficient resource allocation to high-impact projects (Eisenhardt & Martin, 2000).

To deploy higher-order dynamic capabilities through knowledge management, managers must have a toolbox of building blocks that have been purposefully crafted for the accumulating knowledge and development of a culture of organisational learning (Schilke et al., 2018). Through this process, rules about how information is gathered are set within the manager's framework for scanning and exploring the environment. Managers must have a sense of what conditions will trigger them to stop collecting information and engage in synthesising and analysing the data for informed decision-making on the actions the firm will take to exploit the opportunities that would have emerged (Fainshmidt et al., 2019). A case that helps to illustrate the importance of management's ability to use knowledge management

capabilities and sense-making, seizing, and transforming is the story of IBM's management that is recognised as an example of a team that was able to change and evolve the business model by transitioning to mainframe computing (Helfat & Peteraf, 2015).

In contrast, to the positive impact on the firm's competitive advantage and superior performance that is influenced by the cognitive competence of managers who are engaged in decision-making, resource reconfiguration, and knowledge acquisition processes. There are consequences when firms fail to exit unprofitable ventures and market segments or to unbundle *"resource combinations that are no longer providing competitive advantage"* (Eisenhardt & Martin, 2000, p. 1108). Organisational inertia results in firms relying on dynamic capabilities that are not suitable for the dynamism in the business environment or unstable macroeconomic challenges (Akpan et al., 2021; Lee et al., 2021; Parker & Ameen, 2018; Williams et al., 2017). Management inertia will cartel a firm from evolving and renewing itself as observed with NCR's top management in the 2000s. Because over time the managerial cognition and dominant logic did not allow NCR's business to reconfigure its business (Helfat & Peteraf, 2015). However, the positive impact of a highly dynamic competent Chief Executive Officer helped NCR USA to redirect the firm's strategic focus through corporate restructuring and successful transition to mainframe computing. The two case studies mentioned demonstrate the importance of management cognitive capabilities in enhancing the dynamic capabilities of the firm and leading transformational change in dynamic environments.

Successfully leading transformational change in dynamic environments is not just about the processes of management knowledge and decision-making. Managers of firms need to be clear about what constitutes the higher-order, tacit and inimitable nature of dynamic capabilities as they are embedded in unique relationships (Lee et al., 2021). These unique relationships are what strengthens the firm's capacity to renew and transform unique firm-specific internal and external resources through recombination and reconfiguration of assets and resources.

2.5.3 Dynamic Capabilities and Transformation

One of the important aspects of the resource-based view is the firm's ability to continuously renew the organisation's resource structure (Teece, 2018a). However, the weakness of the resource-based view is that the framework does not present managers with pathways that demonstrate how firms can renew and transform their resources when the operating environment suddenly changes (Teece, 2018b). Transformation as a dimension of dynamic capabilities by nature speaks to the notion of continuous deliberate renewal and improvement of the firm's resource structure and asset base.

Lee et al. (2021) argue that dynamic capabilities are higher-order core competencies that have evolved and enable firms to combine, build and reconfigure internal and external resources to meet demands in a dynamic business environment. These dynamic capabilities are highly experiential and hard to imitate - where present decisions are dependent on choices and strategies made in the past. They are embedded in unique firm-specific internal relationships (Nayak et al., 2020; Teece et al., 2016) and firm-specific external relationships (Zeng et al., 2017) given the dynamic and unstable environmental changes such as economic downturns (Girod & Whittington, 2017). Managers leading firms in unstable macroeconomic environments can take advantage of co-specialisation when making decisions on asset and resource transformations (Teece, 2020). Co-specialisation is a macro-foundation of the transformation dimension of dynamic capabilities that allow firms to combine continuously and incrementally three or more assets and resources to create long-term value for the firm.

Another enabler that allows firms to identify (sense) and capture (seize) opportunities in technology, products, and markets (Girod & Whittington, 2017) is the decentralisation of decision-making processes. The forming of alliances and partnerships, when well aligned to the firm's resource structure, can increase the firm's resource base (Teece, 2007). The firm's dynamic capabilities ensure that these opportunities are transformed continuously for aligning and realignment of the firm's tangible and intangible assets by utilising internal and external resources (Fainshmidt et al., 2019; Teece et al., 2016).

Firms that succeed in difficult dynamic environments successfully transform tangible and intangible firm-specific asset portfolios to gain competitive advantage (Lee et al., 2021; Zeng et al., 2017). Building on the work relating to dynamic capabilities in dynamic economic conditions in emerging markets, Lee et al., (2021) define two asset classes. The first class is firm-specific physical assets. These are intellectual properties, patents, and human capital. The second class is firm-specific transactional assets which are the internal core competencies, routines, and common governance policies that allow the firm to earn economic rent (Lee et al., 2021; Teece et al., 1997; Winter, 2003).

Although Lee et al., (2021) and colleagues look at the efficacy of asset recombination and reconfiguration in multi-national enterprises, their discourse on the subject for manufacturing firms in unstable macroeconomic environments makes a valid contribution to the effectiveness of dynamic capabilities in asset recombination. The first class of assets (firm-specific physical assets) gives firms the exclusive rights to explore and exploit opportunities for tangible resources, intellectual property, patents, and technical skills. These firm-specific physical assets are inimitable and cannot be easily replicated by competition (Lee et al., 2021). They, therefore, form part of the firm's repertoire of dynamic capabilities.

Further to Lee and colleagues' contribution on asset recombination when firms venture into international markets, managers need to take stock of the environmental dynamics in such markets (Fainshmidt et al., 2019). The authors show that dynamic capabilities are not a one size fits all concept because environmental dynamism will require that managers pursue differentiated strategies. Their study demonstrated that in stable markets higher-order dynamic capabilities will create competitive advantage and enhance firm performance when pursuing a differentiated strategy. However, in unstable dynamic macroeconomic environments, dynamic capabilities do not support a differentiated strategy, which may prove to be costly for the firm. Thus, the authors propose that a low-cost strategy where firms deploy low-order dynamic capabilities will yield the best outcomes for firm performance. The low-cost proposition is worth taking note of as this study will seek to gain insights into the experiences of managers in manufacturing firms in an unstable macroeconomic environment.

2.5.4 Challenges of Dynamic Capabilities

Consequently, there seem to be contrasting findings on the view of ordinary capabilities that maintain the firm's status-quo and are best suited for stable market conditions (Lee et al., 2021; Winter, 2003) where there are no economic shocks or persistent challenges (Akpan et al., 2021; Williams et al., 2017). In such cases, the firm does not require consistent redesign and transformation (Girod & Whittington, 2017; Lee et al., 2021). In contrast, Fainshmidt et al., (2019) postulate that the ordinary capabilities of repetitive patterns, processes and routines are well suited to dynamic unstable macroeconomic environments because of the cost considerations of deploying higher-order dynamic capabilities when redesigning and transforming the firm's asset base.

The second class of assets (firm-specific transactional assets) have common characteristics across firms. They are embedded in firm-specific sophisticated routines and patterned behaviour of individuals who can sense, seize and transform the firm's resources base and create competitive advantage, yet these dynamic capabilities are transferrable and replicable (Lee et al., 2021). This situation was observed in technology companies that are entrepreneurial and on the cutting edge of innovation. These companies share the same level of function and process of dynamic capabilities that trying to deploy additional higher-order dynamic capabilities that transform already embedded higher-order dynamic capabilities will be costly and have weak support for incremental firm performance (Fainshmidt et al., 2016).

First-order capabilities only allow the firms to use capabilities that maintain the "status quo" and continue to produce the same products, marketed to the same customers, within the same markets. Firms operating in economic environments that exhibit persistent economic challenges need to be cognisant of the dangers to firm resilience if they do not *"create new*

value by recombining or reconfiguring existing assets" (Lee et al., p.g.3, 2021) through organisational learning and experience. Maintaining the "status quo" is only possible in stable markets that have normal environmental and contextual conditions. In normal conditions, ordinary capabilities of routines, activities, and best practice standards help the firm generate income in the present. Thus, when these routines, activities, and best practice standards are deeply embedded, they result in organisational inertia that will inhibit the firm from coping with unstable macroeconomic challenges (Barnard et al., 2017; Lee et al., 2021). Also, when an organisation does not possess the dynamic capabilities for firm-specific asset recombination, an imbalance of the recombinant firm-specific asset portfolio (such as plant equipment and operational employees) will impede the organisation's ability to be competitive and resilient (Akpan et al., 2021; Lee et al., 2021).

In conclusion, firm asset recombination and reconfiguration is essential in unstable and unstable economic environments, and the dynamic capabilities of a firm enable it to make changes to asset structures as an ongoing continuous process through sensing, seizing, and transforming its assets portfolio to create competitive advantage (Lee et al., 2021; Teece, 2018). The extent to which the firm transforms its ordinary capabilities (Lee et al., 2021; Teece, 2014; Winter, 2003) and enacts unique dynamic capabilities allows the firm to constantly "create, modify, extend, or upgrade" its asset portfolio to cope with the changes in the environment (Lee et al., 2021; Winter, 2003). Asset portfolio transformation and reconfiguration drive an organisation towards sustainable superior performance and competitive advantage (Akpan et al., 2021; Lee et al., 2021; Zeng et al., 2017).

2.6 Dynamic Capabilities and Firm Heterogeneity

2.6.1 Introduction

To understand the foundations of firm competitiveness and sustained growth, Teece, (2014) expanded the dynamic capabilities framework as a tool to help strategic managers and researchers understand the foundations of dynamic capabilities and how they can enhance firm heterogeneity. As previously discussed, dynamic capabilities explain heterogeneous capabilities that managers in the firm co-create, restructure, and transform, to address the challenges of complex environments. This view holds that the firm's capabilities and capacity are derived from *"its complex, tacit, historically shaped, and, hence, idiosyncratic set of routines and competencies"* (Nayak et al., 2020, p. 280). Although Teece and colleagues make an important contribution to the dynamic capabilities literature, Nayak et al., (2020) question what underpins the firm's capacity to combine, build, and reconfigure resources?

How idiosyncratic and inimitable are dynamic capabilities and to what extent are they consciously or unconsciously acquired?

2.6.2 Heterogeneity of the Firm

An area of contention is the view held by Teece (2014) that dynamic capabilities are tacit, complex, and idiosyncratic to the extent that a firm itself may not be able to understand them, let alone its competitors. These dynamic capabilities cannot be replicated, codified, or taught in the normal course of business (Teece, 2007). The dynamic capabilities viewpoints to the development of flexibility and resilience and unique path-dependent outcomes that managers can develop to instil heterogeneity which results in competitive differentiation when operating in contexts with industry-level dynamism (Bogers et al., 2019). In contrast, Eisenhardt & Martin (2000) and colleagues argue that in highly unstable and dynamic environments, the dynamic capabilities required for competitive advantage may be simple experimental and iterative processes that can be learned by the organisation's individuals. These dynamic capabilities are explained as best practices that can be replicated and fine-tuned.

Teece et al. (1997) insist that the ability of the firm to "integrate, build and reconfigure" is what promotes superior performance. Dynamic capabilities require management teams to sense key developments and trends and then formulate responses that guide the firm in the direction it should go. The ability to leverage knowledge that is explicit to implement change and achieve parity in scaling is a dynamic capability that supports the firm to achieve a competitive advantage. In contrast, Eisenhardt & Martin (2000) see the dynamic capabilities framework presented by Teece and colleagues as a concept that is rooted in the firm's routines, competencies, and best practices, therefore, can be substituted or imitated. Because they can be imitated, their ability to deliver superior performance and competitive advantage is questionable.

Given the arguments and tensions existing between the two views on dynamic capabilities, Nayak et al. (2020) posit that dynamic capabilities come from a noncognitive base of generic capabilities which have been acquired by the firm over time and are situated in a particular environment. Scholars agree that the development of dynamic capabilities is greatly influenced by the environment in which the firm operates (Eisenhardt & Martin, 2000; Nayak et al., 2020; Teece, 2014; Teece et al., 1997; Zeng et al., 2017), and the influence of idiosyncratic tendencies of managers who make decisions on the deployment of dynamic capabilities that transform the firm's resource base (Giudici, Reinmoeller, & Ravasi, 2018). Furthermore, the concept of internal and external environmental impact on firm heterogeneity is under-theorised, allowing researchers to explore the macro foundations that give rise to the dynamic capabilities that promote the heterogeneity that resides within the firm (Teece, 2007).

The experiential interactions of managers and employees in a firm are important in generating idiosyncrasies that give rise to a firm's collective character and hence heterogeneity (Nayak et al., 2020).

2.6.3 The Cognitive Nature of Managers

Evidence from dynamic capabilities research is starting to explain whether dynamic capabilities are explicitly, cognitively, and tacitly acquired (Nayak et al., 2020; Eisenhardt & Martin, 2000; Teece, 2014; Teece et al., 1997). When evaluating firm performance and the interactions of managers, the nature of dynamic capabilities is sometimes viewed as simple, yet this fails to explain in cognitive language the experiential and iterative nature of capabilities (Eisenhardt & Martin, 2000). A manager's cognitive capability is understood as combining mental processes and structured mental frames of perception, attention, pattern recognition, and interpretation of data (Helfat & Peteraf, 2015). Hence, cognitive capability should allow managers flexibility in sensing the environment for opportunities and knowledge accumulation and subsequent decision-making when meeting the demands of the ever-changing environment.

Cognition is an executive function that managers develop through purposeful experiential learning and the creation of new knowledge and novel ideas that are seized and transformed to produce positive outcomes in firm performance (Conboy et al., 2020; Pandza & Thorpe, 2009). Alternatively, the view that dynamic capabilities are embodied in the entrepreneurial effectuation of the manager who uses deliberate practice to sense, seize, and transform resources to capture opportunities for the firm's competitiveness (Lee et al., 2021; Teece et al., 2016) can be embraced. Therefore, to rationalise whether dynamic capabilities are simple or complex does not limit our understanding of cognitive behaviour "as the capacity for effective adaptive action in situ without presupposing the need for abstract mental representation" (Nayak et al., 2020, p. 285). The conclusion is the realisation of the paradox that two schools of thought support both the simplicity of dynamic capabilities and that of complexity.

The macro foundation of dynamic capabilities that looks at the individual's capacities may help to bring an understanding to the debate. In situations of complex unstable environments, when a firm faces disruption that may lead to firm collapse, managers may employ heuristics to manage the situation and avert loss (Manfield & Newey, 2019). Heuristics are practical and imperfect cognitive behavioural techniques used for problem-solving that have the potential to help managers to adapt to current situations, attain short-term goals and mitigate loss (Manfield & Newey, 2019). Heuristic behaviour helps managers to sense, seize and transform firm assets by dismantling and disposing of resources to create transformation and renewal

for the firm. In contrast, the second school of thought states that cognitive capability is complex adaptive actions and routines of problem-solving and reasoning which managers employ when making long-term decisions on strategic asset realignment and recombination in building the firm's competitive advantage (Helfat & Peteraf, 2015). Whether cognitive capability is a simple or complex dynamic capability is both path and context-dependent (Fainshmidt et al., 2019).

2.6.4 Challenges of Replicability of Dynamic Capabilities

Are dynamic capabilities inimitable or they can be replicated? According to Eisenhardt & Martin (2000), dynamic capabilities can be replicated and substituted because routines and best practices that are homogeneous are at the core of acquired dynamic capabilities. This goes against the assertion made by Teece et al. (1997) that dynamic capabilities are hard to imitate because once routines and processes become replicable, they seize to be dynamic capabilities. In support of Teece's argument, (Nayak et al., 2020) posit that dynamic capabilities are indeed difficult to imitate. The inimitability of dynamic capabilities, therefore, lies in the idiosyncrasy and stickiness that build firm heterogeneity and is embedded in the noncognitive actions of the firm's managers.

Because of the debates that have raised tensions about idiosyncrasy and imitability, Nayak et al., (2020) presuppose that empirical evidence is entrenched in the cognitive understanding of human behaviour and interactions. To address these tensions, an area that is promising in providing answers and bridging the gap between proponents of the homogeneity of dynamic capabilities and those who assert the heterogeneity of dynamic capabilities is the concept of "noncognitive micro-foundations of dynamic capabilities" (Nayak et al., 2020). The term noncognitive is taken *"to mean an action that is not motivated by conscious thought or that involves information processing and abstract analysis"* (Nayak et al., 2020, p. 287). The sharpening of adaptive actions explains the expert skills of managerial entrepreneurship that enable information processing, reflective thinking, and rational analysis of the opportunities that the organisation is afforded in its environment.

2.7 Dynamic Resilience Capabilities

In section 2.4.5 we discussed the new dimension coined by Manfield & Newey (2019) which they called dynamic resilience capabilities and how these influence firm-specific capabilities in building firm resilience. This specific dynamic resilience capability was until now not theorised because the resilience literature was mainly concentrated in the domain of firm recovery from temporary disruptions (Parker & Ameen, 2018), the global economic crisis (DesJardine et al., 2019), and the dynamic capabilities in supply chain management (Teece,

2007). Research should focus on developing theoretical frameworks that are valuable to practitioners (Akpan et al., 2021; Bhamra, Dani, & Burnard, 2011; DesJardine et al., 2019). This is more so for managers of firms in low-income countries facing complex and constrained macroeconomic environments who would benefit from an understanding of how dynamic capabilities support firm resilience (Akpan et al., 2021; Barnard et al., 2017; Parker & Ameen, 2018).

In Zimbabwe's unstable, uncertain, complex, and ambiguous business environment, for firms to thrive they have no option but to build resilience capabilities. These firms need to have the ability and capacity to develop dynamic resilience capabilities that enhance their functionality and allow them to absorb disruptions and environmental constraints (Kahn et al., 2018; Parker & Ameen, 2018). Much of the scholarly articles explore the dynamic capabilities of firms in advanced economies with stable macroeconomic fundamentals and even in cases where this is done under conditions of disequilibrium, such as a recession, very few first world firms have experienced two decades of persistent economic instability at the scale seen in Zimbabwe (Chitiyo et al., 2016). As such, resilience has only been studied over short-term periods of instability such as bouncing back and restoration from disruptions caused by the financial crisis and ecological and natural disasters (DesJardine et al., 2019; Parker & Ameen, 2018; Williams et al., 2017). Therefore, little is known about how managers' dynamic capabilities influence firm resilience in macroeconomic environments with persistent challenges over an extended period (Helfat & Peteraf, 2015; Manfield & Newey, 2019; Parker & Ameen, 2018; Schilke et al., 2018).

2.8 Knowledge Gap

There remain debates in strategic management academic circles whether dynamic capabilities are heterogeneous, that is, idiosyncratic in nature, tacitly acquired and hard to imitate, or simple experimental actions which are highly repetitive and seen as best practice and standards of a firm's core competencies. As such, the theoretical construct of dynamic capabilities is rich with evidence that has been widely accepted, and has received robust empirical attention (Schilke et al., 2018). Other researchers have started to investigate dimensions of dynamic capabilities and how managerial cognition and decision-making impact resource reconfigurations that that are impacted by environmental dynamism and the factors that interplay with the firm's resources. (Conboy et al., 2020; Teece, 2020).

Therefore, little research has investigated the cognitive nature of dynamic capabilities and how the polished idiosyncratic sensitivities and predispositions of individuals in organisations are enacted in collective adaptive action (Nayak et al., 2020). This study seeks to understand the lived experiences of individuals and how cognitive functions interact together to inform

organisational decision-making through sensing, seizing, and transforming the firm's resources, a process of reconfiguration and renewal (Conboy et al., 2020; Manfield & Newey, 2019; Teece, 2018b). This is in response to questions posed by Helfat & Peteraf, (2015) and Schilke et al., (2018) to advance research and investigate the question, "*How exactly, do dynamic managerial capabilities affect organisational capabilities"*? (Schilke et al., 2018, p. 417), hence the study looks at resilience in an unstable macroeconomic environment as an outcome of dynamic capabilities that are mediated and moderated by some set of variables and the framework development will follow the basic organising framework of dynamic capabilities outlined by Schilke & Helfat (2018) and depicted in Figure 4.

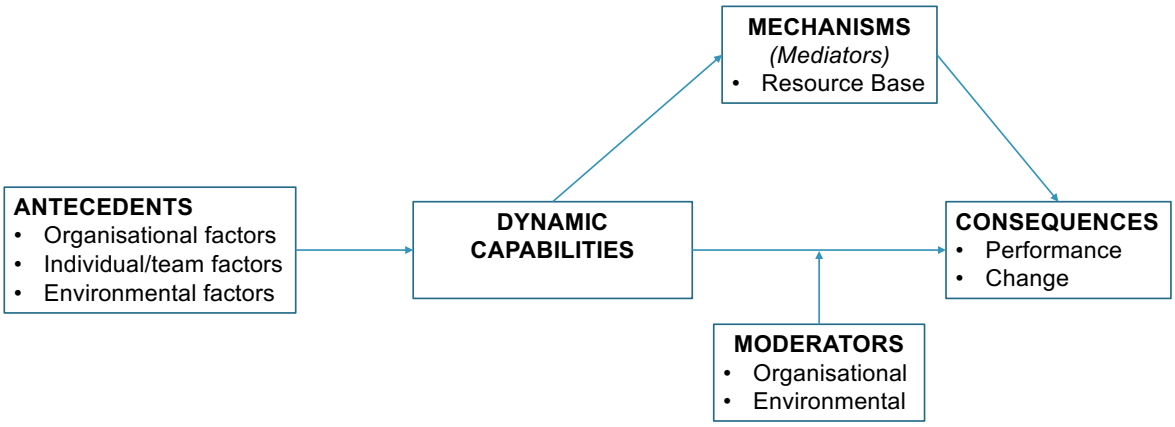


Figure 4: Organising framework of dynamic capabilities

Note: The above frame is the summary version of the Organising Framework of Dynamics Capabilities adapted from Schilke, & Helfat (2018, p. 402). Quo Vadis, dynamic capabilities? A content-analytic review of the current state of knowledge and recommendations for future research.

In conclusion, this study seeks is to contribute to the literature on the dynamic capabilities of firms in low-income countries and how dynamic capabilities contribute to firm resilience in unstable macroeconomic environments that have persistent challenges over a long period.

Chapter 3: Research Questions (RQs)

3.1 Research questions and the aim of investigation

How do dynamic capabilities influence organisational resilience in unstable macroeconomic environments with persistent challenges over a long period?

Below are the research questions (RQs) that stand out from the literature review preceding this chapter. The interview has been designed to explore insights into how managers deploy dynamic capabilities and make decisions on coordinating and recombining resources and assets and Table 3 below shows a summary of the literature which will answer the research questions below on dynamic capabilities.

RQ1: How do managers in manufacturing firms identify opportunities in the macroeconomic environment that inform decision-making and give rise to firm performance?

The question seeks to determine how firms identify emerging trends and opportunities in the environment (Teece, Peteraf, & Leih, 2016). The insights gained will look at how firms make decisions on the best opportunities, and how these opportunities are captured and implemented (Fainshmidt et al., 2019; Lee et al., 2021).

RQ2: What decision criteria inform the restructuring of an organisation's resources to achieve strategic business objectives?

The ability of entrepreneurial managers to transform the organisation's resources and assets is critical for strategic success (Teece, 2014; Zeng et al., 2017). This question will uncover the dynamic capability of how managers use their cognitive abilities (Helfat & Peteraf, 2015) to combine old and new knowledge to inform organisational restructuring, asset recombination, and reconfiguration (Girod & Whittington, 2017).

RQ3: In what ways is knowledge assimilation a key capability of managers operating in unstable macroeconomic environments?

This research question aims to discover idiosyncratic cognitive and non-cognitive behaviours of the organisation that can be defined as unique and non-replicable (Nayak et al., 2020; Teece, 2018a). Dynamic capabilities of a learning organisation are hard to imitate therefore, the foundations of competitive advantage (Lee et al., 2021; Pal et al., 2014) will strengthen the firm's ability to acquire new knowledge and use it to meet the commercial objectives of the firm (Conboy et al., 2020).

RQ4: How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to the firm's resilience over an extended period?

This research question aims to determine how the managers' dynamic capabilities contribute to firm resilience by assessing the firm's adaptability and flexibility in the face of an unstable dynamic environment (Fainshmidt et al., 2016; Ferreira et al., 2020; Manfield & Newey, 2019; Teece, 2014)

Table 3: Literature on dynamic capabilities

Research Questions	***Literature Review***	***Data Collection***	***Insights from Literature***
RQ1: How do managers in manufacturing firms identify opportunities in the macroeconomic environment that inform decision-making and give rise to firm performance?	Winter (2003) Teece (2007) Fainshmidt (2019) Lee et al (2021)	Sub-questions 1-3 explore the sensing dimension of dynamic capabilities for opportunities and threats.	The sensing capability enables managers to follow developing trends and patterns in the macroeconomic environment, which leads dynamic teams to identify new opportunities and threats. A key capability in the sensing dimension is knowledge gathering and accumulation which informs decisions on which opportunities to pursue.
RQ2: What decision criteria informs the restructuring of the organisation's resources to achieve strategic business objectives?	Girod & Whittington (2017) Zeng et al. (2017) Teece (2018b; 2020) Lee et al. (2021)	Sub-questions 1-3 explore processes employed to seizing opportunities and profitable ventures, while avoiding decision errors.	The evidence show that the ability for managers to make the right decisions on asset and resource alignment structures is critical for strategic success. Seizing involves the cognitive abilities of managers to respond quickly to emerging trends and the quick capturing of opportunities in new product development, new customer segments, new target markets and new ventures.
RQ3: In what ways is information assimilation a key capability of managers operating in unstable macroeconomic environments?	Teece (2018a; 2020) Conboy et al (2020) Nayak et al (2020) Ferreira et al. (2020)	Sub-question 1-4 investigate how managers' decisions impact the firm's asset transformation and impact firm renewal.	Managerial cognition and firm heterogeneity has received attention, with research pointing to the adaptive nature of managers and the capability to manage knowledge that informs decisions, can give strength to firm renewal and survival when operating in uncertain environments.

Research Questions	*Literature Review*	*Data Collection*	*Insights from Literature*
RQ4: How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to the firm's resilience over an extended period of time?	Girod and Whittington (2017) Teece (2018a) Manfield & Newey (2019) Ferreira et al (2020)	Sub-question 1-3 will look at how the cognitive actions of managers impact employees and organisational outcomes.	Researchers have explored the impact of environmental dynamism on management decisions and firm level performance in unstable dynamic environments. Environmental dynamism has been seen to influence the extent to which firms can deploy high-order dynamic capabilities. To succeed managers must also possess the ability to coordinate their teams to be flexible, adapt to new changes and implement new ways of doing things. This adaptive action brings about resource and assets renewal that will enable firms to develop resilience and attain growth.

Chapter 4: Research Methodology

4.1 Introduction

A qualitative investigation was the most appropriate for the proposed study due to the nascent nature of the exploration of dynamic capabilities within a developing country context and the need to draw deep insights from the unique circumstances under which firms operate in Zimbabwe (Edmondson & Mcmanus, 2007; Kahn et al., 2018). The rationale for the chosen design arose from the need to explore and investigate (Creswell & Creswell, 2018; Yin, 2018) the context in which managers in manufacturing firms operating in unstable macroeconomic conditions have deployed dynamic capabilities and how these have contributed to organisational resilience. Qualitative research allowed for the investigation of the phenomenon of dynamic capabilities and firm resilience by gaining an in-depth understanding of how manufacturing firms perform in Zimbabwe. It describes how organisations thrive and how they show resilience in the face of unfavourable macroeconomic fundamentals that render a business-as-usual approach ineffective (Cunliffe, 2011; Morse, Barrett, Mayan, Olson, & Spiers, 2002; Saunders, Lewis, & Thornhill, 2016). A comparative qualitative study investigated the experiences of the managers of the case firms by uncovering the decision-making processes that inform asset and resource transformations. Furthermore, it explored how collective adaptive actions of firm managers create unique capabilities that contribute to firm resilience (Manfield & Newey, 2019; Nayak et al., 2020).

4.2 Purpose of Research Design

The study design was exploratory, as it sought to gain a better understanding of the phenomenon in a manufacturing setting about the dynamic capabilities that have built firm resilience (Saunders & Lewis, 2018). The findings allowed new insights to inform what dynamic capabilities have been deployed by firms in a low-income country and how and why some of these firms were able to withstand the disruptions and complexities of unstable macroeconomic challenges (Edmondson & Mcmanus, 2007). Furthermore, the qualitative study gave insights into the experiences of managers in case organisations and how their collective adaptive actions impact organisational decision making (Morrow, 2007).

The study used a deductive approach to thematic analysis using a six-phase process (Braun & Clarke, 2019). An interpretivist philosophical approach that looked at managers of the manufacturing entities as social actors who give meaning to the roles that they play and the values that they hold (Sandberg, 2005). Thus, the interpretivism paradigm was suitable for analysing the organisational experiences of the managers who are responsible for making

business decisions that are enacted through organisational routines, practices, and processes. This paradigm satisfies the demands of the research problem of dynamic capabilities as it embraces the realities of both the participants as they narrate their stories, and the researcher who shares the experiences by listening to their stories. The investigator was able to observe the way managers lead and coordinate firm activities. This was an opportunity to share the lived experiences of the firm's members as they recount their business stories (Cunliffe, 2011; Morrow, 2007).

Due to the nature of the research problem, a deductive approach to building theory from emerging patterns and themes in the literature contributed to how data were collected and analysed (Braun & Clarke, 2019). The research approach used to build and develop emerging themes through an iterative recursive process involved using questions that explored the antecedents of dynamic capabilities in a manufacturing organisation (Morrow, 2007). As the research progressed, an iterative process created room for the flexibility to go back and forth by reengaging with the data to enable learning from the managers of the organisations and see how they developed dynamic capabilities for sensing, seizing, and transforming their organisations to be more resilient than their peers firms (Edmondson & Mcmanus, 2007).

Given the need for in-depth insights, the study engaged two-case comparative firms which were purposefully selected by the researcher who had prior knowledge regarding two case firms. The comparative nature was to establish credibility and increase the level of reliable data (Yin, 2018). A full immersion into two organisational settings drew rich insights into the nature of these organisations and how they have built resilience over time. Comparisons were made of themes and new knowledge of the dynamic capabilities of these manufacturing firms operating in unstable macroeconomic environments (Edmondson & Mcmanus, 2007; Eisenhardt, 1989). In a study that explored the dynamic capabilities of manufacturing firms in China, Zeng et al., (2017) used the two-case method to discover the dynamic capabilities of firms that operate in environments of rapid technological change. Williams & Shepherd (2016) used the same method in a comparative study on the resilience of two emerging ventures after the Haitian earthquake. Although scholars recommend longitudinal studies for qualitative exploratory studies, this study was carried out at a specific point in time given the time constraints of the research.

Participants were asked semi-structured open-ended questions during the interview process (Saunders et al., 2016). The interview questions explored and probed the in-depth knowledge of the participants about the organisational processes of dynamic capabilities and the environmental factors affecting manufacturing firms (Edmondson & Mcmanus, 2007). The strategy workshop document form Case1 and the strategy mission document form Case 2 of the organisations were analysed to validate the themes emerging from the data collected from

the participants. This data, combined with the researcher's field notes, annotated at the end of each interview session, allowed data triangulation and verification by constantly checking on the process and ensuring accuracy in recording what happened (Eisenhardt, 1989; Fusch & Ness, 2015).

4.3 Population

The representative population was 176 manufacturing entities that have been operating for more than 20 years in Zimbabwe and were active at the time of the Confederation of Zimbabwe Industries 2020 Manufacturing Survey (Confederation of Zimbabwe Industries, 2021). The research case firms were; Case 1 that had been operating for more than 70 years and Case 2 that had been operating for more than 36 years. Both companies had manufacturing plants in Harare. The interview participants, the managers who worked for the manufacturing firms and were in their firm's strategic management and production teams. These participants shared their lived experiences of how they led and drove firm results (Creswell & Creswell, 2018; Yin, 2018). Another criterion used to select the two case firms was that they had managed to retool and restructure production lines, which helped them implement new strategies in product development so they can gain competitive advantage through initiatives such as, new product innovations, expanding into new market segments by accessing export markets and increasing market share.

4.4 Unit of Analysis

The level of analysis was to start with the contextual setting, that is, firms in the pharmaceutical and fertiliser industries operating in Harare with between 150 and 200 employees. The second-level unit of analysis was to ask case firm executives for access to suitably qualified managers in the finance, administration, production, and research and development departments. These participants were at the level of Managing Directors, Senior Managers, and Middle Managers who had experienced and participated in the decision-making processes and strategy execution activities of the organisation. Interviews were held to capture experiences of operating a business in Zimbabwe's macroeconomic environment (Eisenhardt, 1989; Guest, Bunce, & Johnson, 2006). The participant names were received from the designated contact individual. The researcher then contacted each individual and made interview appointments. Since Zimbabwe was under Level Three COVID-19 mobility restrictions, face to face interviews were not possible, as they were conducted via various platforms as described section 4.7.

4.5 Sampling Method and Size

Purposive and non-probability sampling techniques helped the researcher to define and select well-informed respondents who had sufficient knowledge of the business and its performance (Francis et al., 2010). In identifying the individuals who would form part of the study, the researcher communicated with a contact person who had been appointed by the case companies to coordinate the participants. The researcher requested participants by job function, such as managing director, Head of Finance, Head of Production, etc. These individuals were able to share their lived experiences and knowledge about the organisation and its strategy by providing information on the cognitive actions of managers and how they deploy dynamic capabilities in their environments. The initial sample size for the minimum number of interviews was set at 12 because interviewing six individuals from each case promised to reach data saturation quickly (Guest et al., 2006). In terms of gender distribution, the researcher interviewed ten male and 12 female participants. Twelve participants turned out to be more than adequate for data collection, as theoretical data saturation was achieved in the ten interview (Francis et al., 2010; Fusch & Ness, 2015).

4.6 Measurement Instrument

Semi-structured interview questions were developed based on the objectives of the study and the literature review. The interview guide (refer to Appendix 1) was piloted on two individuals who met the criteria of study participants to evaluate the efficacy of the questions; the degree to which they could give insights that answered the study's research questions (Saunders, Lewis, & Thornhill, 2016b). The pilot assisted in gaining insight into the industries in which the two case firms operate. The insights led to the redesign of the interview guide and consisted of semi-structured and open questions (Spiers, Morse, Olson, Mayan, & Barrett, 2018). At the beginning of the data collection journey, the researcher opened a diary that was used to take field notes. Although these interviews were virtual (Tracy, 2010), the process gave the researcher a way to think about the insights that participants discussed in their conversations. The aspect of interviewing participants and transcribing their conversations made the researcher appreciate the importance of language assimilation and how different people express themselves (Tracy, 2010). All the participants were of Black African origins and spoke English as a second language. This did not pose any problems given that the researcher is also a local who is familiar with the language and general business culture in Zimbabwe. Furthermore, English is Zimbabwe’s official language which is used in business communication.

Theoretical saturation was achieved. This showed that the researcher had collected sufficient data to respond to the research objectives. Saturation happens when there are no new ideas,

themes, or knowledge coming from any additional interviews (Francis et al., 2010; Guest et al., 2006). During the data analysis process, the researcher ensured that once there were one or two consecutive interviews with no new codes emerging; it meant that data saturation had been reached and therefore no new insights were observable in the study.

4.7 The Data Gathering Process

To ensure accountability and the protection of participants' rights, ethical clearance was obtained from the GIBS ethics committee. Once the study received ethical clearance, data was collected through virtual online interviews of approximately 40 to 60 minutes each (Francis et al., 2010). Each interview was recorded using audio to text transcription software called Otter.ai. The recorded interviews were transcribed by the researcher and the assistance of a transcriber to capture the correctness of the conversations and saved as a word document which was later uploaded to ATLAS.ti for thematic analysis and coding of the data (Friese, Soratto, & Pires, 2018). A transcriber was involved during the interview process because the researcher discovered that it took at least four hours to transcribe one interview. To ensure that the transcriber had captured the conversations accurately, the researcher listened to the conversations again while following along in the word document. The word document was used for thematic analysis using ATLAS.ti. Two archival documents, a strategy workshop document for Case1 and the strategy mission document for Case 2 were received from the case firms and used to evaluate the themes that had emerged during the interviews for data triangulation (Guest et al., 2006). A second round of listening and confirming the codes was carried out after evaluating the supervisor's feedback on the findings of Chapter 6. This helped confirm the findings and the themes that had emerged from the study. The number of codes also reduced from the initial 82 to 74 codes after moderating and removing some redundant codes during data analysis.

Interviews were set up through the office of the Managing Director for one of the firms and through the Head of Human Capital for the other firm. The process ensured that the researcher was authorised to gain access and received support from the participants. Face-to-face interviews were conducted via the Microsoft Teams, Zoom, and WhatsApp electronic platforms because Zimbabwe was in level three lockdown measures forCOVID-19. Level three lockdown required companies to close for business by 1530hrs. This resulted in time constraints for both the researcher and the participants. Another factor that disrupted the interview process was participant unavailability. Participants reported that they were going through their budgeting and strategy formulation processes for 2022 and coupled with lockdown measures, they had fewer hours in the day to make extra commitments. However,

progress was made and final interview was concluded at 1800hrs on September the 23rd. The research analysis and reporting of findings was then carried out in the month of October 2021.

4.8 Analysis Approach

In qualitative research, the use of data analysis software such as ATLAS.ti allows raw data to be coded and categorised into themes that give insights into a phenomenon (Friese et al., 2018). The approach to thematic analysis started by developing a codebook of the code definitions which were thematically applied to each data set (Guest et al., 2006). A basic codebook was created before data analysis using two pilot interview scripts and the themes from literature. The development of codes from emergent themes was an iterative and reflexive process that required the reading of the transcripts and comparing the themes with the literature to verify emerging themes (Fereday & Muir-Cochrane, 2006). The deductive approach allowed new codes derived from the interview transcripts to then be added (Fereday & Muir-Cochrane, 2006). All the interview transcripts were uploaded onto ATLAS.ti, together with the archival data for systematic thematic analysis and two memos which were the field notes and the researcher diary. Altogether there were sixteen documents loaded onto ATLAS.ti for this research project.

4.9 Quality Control

Knowledge generated from qualitative research should be trustworthy, consistent, and neutral in its perspective of the emerging theory (Morse et al., 2002). "*Verification is the process of checking confirming, making sure and being certain"* (Morse et al., 2002, p. 17) of facts. It should contribute towards ensuring validity and reliability. Reliability was checked through an iterative process of reading, re-reading, and carrying out recursive processes on the raw data to ensure that every possible theme is explored to establish data credibility (Williams & Shepherd, 2016). What is important is to stick to the original themes to ensure that there is no shift in the definitions ascribed to each code (Creswell & Creswell, 2018). Data quality and trustworthiness were achieved by triangulating data from interview transcripts, the strategy document from Case 1, the strategy mission statement document from Case 2, and the researcher's field notes.

4.10 Limitations

Since this study was set in a specific geographical location (manufacturing firms in Harare, Zimbabwe), the findings may be difficult to replicate in other organisations operating in different macroeconomic settings (Ferreira et al., 2020). The insights gained may not be grounded enough to form strong conceptualisation of the goings on in manufacturing

companies, due to the heterogeneous factors that may be more grounded in the data (Gasson, 2011). Furthermore, the contextual factors that affect these two case firms may differ from other industries, as the two case firms manufacture highly regulated and scientific products in two different fields of science, Case 1 in fertilisers and agrochemicals and Case 2 in pharmaceuticals (Manfield & Newey, 2019).

Themes Analysis and Development of Codes

Data analysis and code development is enriched when multiple researchers are re-coding the data and providing different perspectives to the themes that emerge (Fereday & Muir-Cochrane, 2006). The study on dynamic capabilities was carried out by one researcher and therefore, there were limitations to the extent to which a single coder approach was able to develop in-depth insights and themes that could be cross-validated (Fusch & Ness, 2015). However, feedback received from the supervisor after presenting Chapters 5 and 6 moderated researcher bias and helped to deepen the critical analysis of the meaning of the codes and the themes emerging from the data.

Participants' Bias and Error

Participant bias was mitigated by giving the assurance that all results would be presented without identifiers and that the conversation was between the interviewer and the participant only (Saunders & Lewis, 2018). However, there were situations where participant bias is unavoidable, due to the natural human inclination to not share some aspects of their experiences when dealing with anonymity issues (Annink, 2017). This tendency may affect the way the facts were presented in the collected data. Consequently, where and when an interview is conducted may be affected by the inaccessibility of key and credible participants (Saunders et al., 2016). The familiarity of the participants with the researcher could also pose a bias that would need to be managed during the interview process (Morrow, 2007).

Researcher Bias and Error

The way the researcher asks questions could be flawed, for example, if they change the way questions are asked from participant to participant (Creswell & Creswell, 2018). Bias could have been introduced in the findings when the data were interpreted in ways that deviated from the intended meaning, which impacted the way responses were analyzed and interpreted (Saunders & Lewis, 2018). Given the researcher's familiarity with some of the case organisations and participants to be interviewed, researcher bias was guarded against during the interview process (Morrow, 2007). To avoid bias, the researcher asked the same interview questions to all participants regardless of the level of seniority.

Methodological Fit

Methodological fit is the consistency that the researcher maintains between the research questions data collected and theoretical contribution because data gathering is a nonlinear process that requires a well-designed methodological process (Edmondson & Mcmanus, 2007). Flexibility ensured an iterative process of constantly checking methodology fitness by reviewing and revising research questions at the beginning of the study using pilot interviews and then being consistent in the way questions were asked during interviews (Morrow, 2007). Another factor that had an impact on the method of communication was that instead of face-to-face interviews virtual meetings were held online. Furthermore, the case firms were both going through events that limited the availability of some of the participants. Patience and persistence helped the researcher to manage to perform the last interview on the 23rd of September 2021 at 1800hrs.

The limitations discussed above conclude the discussion on the methodology of the study. Now, the discussion will turn to Chapter Five where the results of the interviews are presented.

Chapter 5: Presentation of Results

5.1 Introduction

This chapter presents the results of the study and is structured around the research questions that explored the topic of dynamic capabilities in manufacturing firms within an unstable macroeconomic environment. In structuring the analysis of the data collected in the interviews, a matrix was created using some of the literature that was presented in Chapter 2. The literature also stood as a guide for the consistent definition of key terms in the dynamic capabilities literature. The results were presented to discover the insights that were learned and the themes that emerged when evaluating whether managers in manufacturing organisations had deployed dynamic capabilities that allowed them to sense and seize opportunities and threats that informed decision-making. The decision criteria that inform the restructuring of the firm's resource base and how the cognitive behaviours of managers influence organisational heterogeneity were reviewed. The final discussion of dynamic capabilities looked at environmental factors that impact the firm's resilience and sustained performance in an unstable macroeconomic environment.

5.2 Description of the unit of analysis

The unit of analysis comprised of three levels of management teams in the case organisations. These were executive managers, senior managers, and managers. The sampling for this unit of analysis was purposive to ensure that the study concentrated on the decisive actions and lived experiences of management teams in manufacturing settings and how they restructured the firm's asset base to ensure competitive performance that can be sustained over a long time in an unstable macroeconomic environment.

The sample was made up of 12 participants, ten men and two women, with varying years of experience ranging from 10 to 29 years in the firms they worked in. Job functions of the participants included Managing Directors, Research and Development Senior Managers, Production and Operations Executive Managers, Sales and Marketing Managers, and Finance Managers, see Figure 5, below. The participants represented a heterogeneous group with a broad range of experience that will be reflected on as the discussion of results progresses.

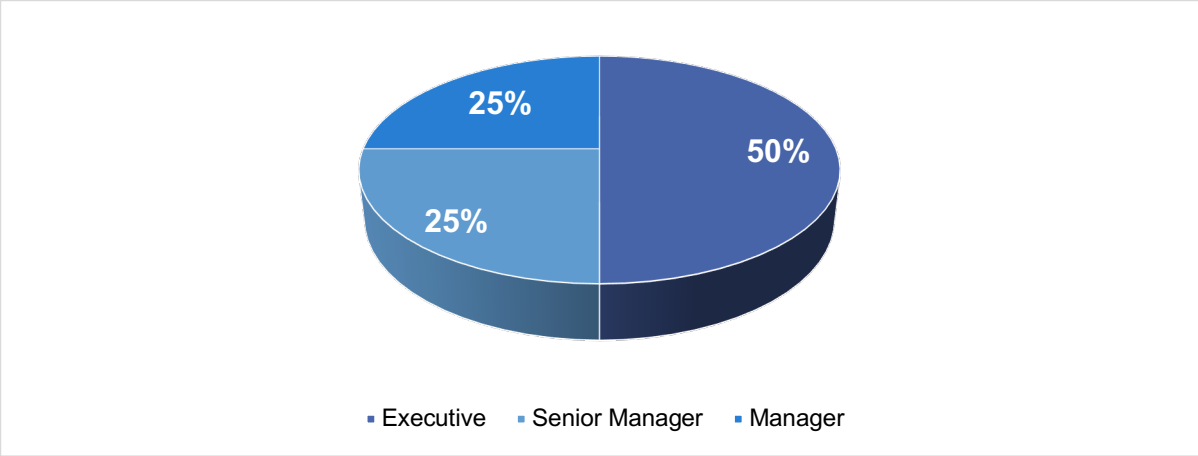


Figure 5: Participation by organisational seniority

Source: Author's own

So that participants remain anonymous they will be identified by their participant and firm numbers. The firm number will be included in the discussions as this will assist with comparing data between the two case firms. The two case firms were selected purposively and are located in Harare, Zimbabwe. The firms are in different industries, one in manufacturing of *generic drugs*, and the other in *manufacturing of fertiliser and agricultural chemicals*.

5.3 Participation and analysis of transcripts

The interviews were undertaken via virtual meetings on Microsoft Teams because of mobility restrictions imposed by the government at the time the data collection phase started. Participants were called telephonically to set up the interviews. Once the date and time had been agreed upon, a Microsoft Teams invitation together with the consent form and the interview guide were sent. The interview guide (Appendix 1) had a brief description of the topic and the literature so that participants (see Table 4) would acquaint themselves with the focus of the study.

Table 4: Participants profiles who were interviewed

Participant number	***Case Firm***	***Areas of responsibility in the case firm***
P1	Case 2	• Managing Director responsible for the overall strategy of the business
P2	Case 1	• Executive Finance and Administration and Board Secretariat
P3	Case 2	• Head of Production and Manufacturing, including operations engineering, machining, and security
P4	Case 2	• Head of Marketing responsible for sales promotion, distribution, and exports

Participant number	*Case Firm*	*Areas of responsibility in the case firm*
P5	Case 1	• Managing Director responsible for coordinating and facilitating the overall strategy of the business
P6	Case 2	• Head of Research and Development - product development, regulatory compliance, and quality control
P7	Case 1	• Operations Manager - manages inbound and outbound logistics and also quality assurance
P8	Case 2	• Chief Operations Officer in the group. Oversees the manufacturing entities from a strategic viewpoint.
P9	Case 1	• Manufacturing Executive production, operations and health and safety of the human capital resources
P10	Case 1	• National Sales Manager for business development, customer engagement, and customer training
P11	Case 2	• Finance Manager responsible for the management and financial accounting and modelling
P12	Case 1	• Human Capital Senior Manager responsible for all staff engagement, recruitment, and talent management

Source: Author's own

The participants' responses generated 73 codes and theoretical saturation was reached at interview 11 (see Figure 6) at which no new insights could be discerned from the participants. The first three interviews generated 59% of the codes and a small spike in codes was experienced with Participant 8's experiences and insights. However, all twelve interviews were coded to give further grounding to the insights that had already been recorded.

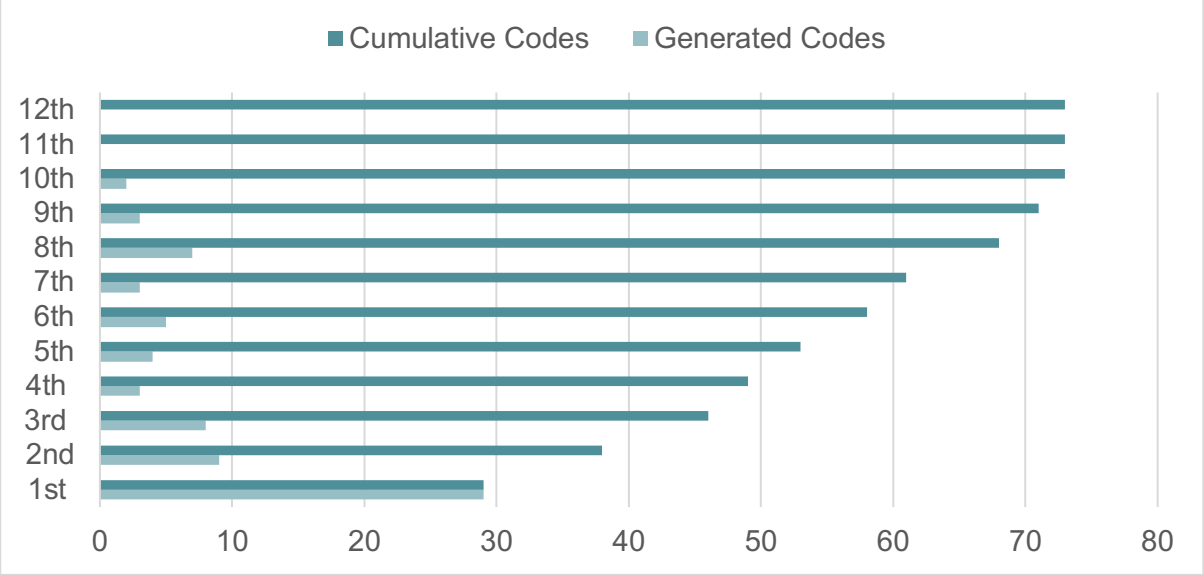


Figure 6: Code progression and development

Source: Author's own

The following sections present the results of the interviews and the insights that were shared by the participants in the two case studies. The insights were coded using the qualitative research software *ATLAS.ti*. Given that the study used dynamic capability theory the process as discussed in Chapter 4 followed a deductive thematic analysis. Braun & Clarke's (2019) six phase thematic analysis process was used with the deductive framework for data familiarisation coding and theme recognition. This led to the process of creating the initial code book in Microsoft Excel. The next step was to test the codes in ATLAS.ti using the interview transcriptions of the pilot interviews, together with two of articles that contributed to the Excel code book. The following table presents a summary of the six-phase thematic analysis process.

Table 5: Braun and Clarke six-phase for thematic analysis

Phase	***Process***	***Result***
1	Listened to the recordings and re-read the transcriptions highlighting interesting insights	Initial codes and excel notes
2	Started the process of aligning start codes into categorises	Generated a list code which gave meaning to the how the research question will be answers
3	Descriptions of the codes and the themes emerging	Generated code list for further analysis
4	Look at the way data is supporting the themes that are emerging	Recognising how the themes are telling a story about the phenomenon being observed
5	Define the codes, where in the data it occurs and theoretical definition	An understanding of the themes that are emerging
6	Report writing and deciding the themes that are useful for the study	Good description of the out put

Note: Adapted from Braun & Clarke (2019).

In the following sections the results of each question are first presented as they emerged from the data. Each section will end with a summary of the results as they relate to the research questions.

5.4 Results: Research Question 1

How do managers in manufacturing firms identify opportunities that inform decision-making and give rise to firm performance in the macroeconomic environment?

This research question was designed to understand how the sensing dimension is enacted by managers to enable them to identify the opportunities and threats that emerge in the operating

business environment. In unstable macroeconomic markets, sensing processes can be a difficult capability to enact although it is key in shaping the firm's trajectory when learning and interpreting emerging trends and patterns. These trends and patterns are observed in customers, target markets, technologies, emerging scientific know-how, and research and development. The firms employ analytical tools that allow them to make sense of it all. Figure 7 provides a schematic representation of the three main themes that emerged from the coding process and the related sub-themes. The figure shows that *decision on profitable opportunities* was linked to managerial cognition and capacities which was in turn linked to 'decision making processes.

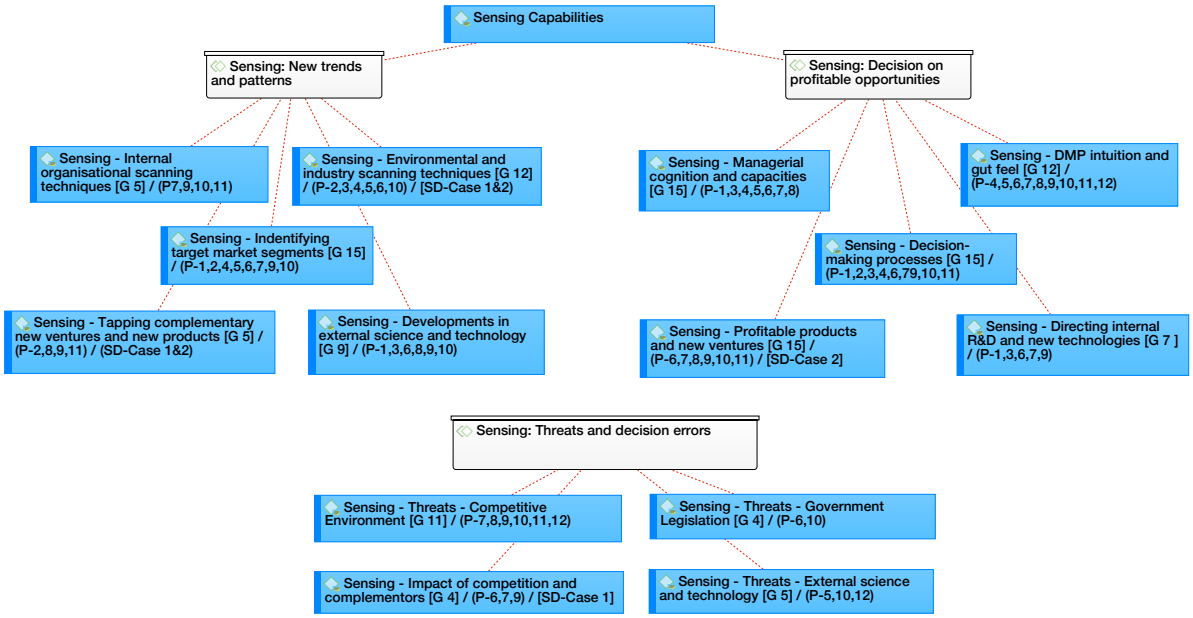


Figure 7: Schematic representation of the themes for sensing capabilities

Note: G = Groundedness, P = Participant, SD = Strategic Document

Source: Author's own

5.4.1 The Sensing Capability

The operational definition given to the sensing capability dimension is *"identification, development, co-development, and assessment of technological opportunities (and threats) in relationship to customer needs"* (Teece et al., 2016, p. 18). Participants shared their insights and the firm processes that are used for scanning the environment guided by semi-structured questions presented to them by the researcher.

5.4.2 Tracking of new trends and patterns

Table 6 shows that a significant number of participants pointed to identifying target market segments as important for sensing the environment for opportunities and threats.

Table 6: Themes for sensing the environment for opportunities and threats

Ranking	*New Trends and Patterns*	*Participants*	*Groundedness*
1	Identifying target market segments	8	15
2	Environmental and industry scanning techniques	6	12
3	Tapping developments in external science and technology	6	9
4	Tapping complementary new ventures and new products	4	5
5	Benchmarking and competitor analysis	4	5

5.4.2.1 Identifying target markets

Source: Author's own

With respect to identifying target markets Participant 1 narrated how Case 2 as a company was the first in Africa to manufacture a certain class of drugs saying, *"A few years ago when Zimbabwe started making this drug…, we decided it will be an opportunity when the demand for that treatment regime was at its peak. We were not supported by anyone as a country."* However, the company engaged the government and the World Health Organisation and developed capabilities to manufacture. Fast forward to today, the company has identified new opportunities in the pain management segment for non-communicable diseases, *"One of the ways we have looked at the market is that we believe non-communicable diseases, for example, diabetes and hypertension, and pain management drugs are the way to go"* as a business strategy.

In comparison, Case 1 identifies target markets through a process of farmer engagements as Participant 7 explained that *"In terms of new products that we have introduced on the market, some were through the free advice we give to farmers. We take the feedback from the farmers and come up with products that meet their requirements."* This process of being entrenched in understanding the farmers has helped them innovate fertilisers. The participant shared that they *"have special potato fertilisers and the vegetable fertilisers coming through that were the result of engagement with a farmer."*

5.4.2.2 Environmental and industrial scanning

The economic environment has made the activities relating to environmental scanning more pertinent for firms in the manufacturing sector. As such, the members of the case companies

have membership in various industry bodies and associations which helps them in environmental scanning and tracking new trends in the industries in which they operate. Participant 2, Case 1 said that membership in industry associations helps with environmental scanning to track new trends in the agriculture and fertiliser industry. *"We are members of IFA (International Fertiliser Association), there you find all players in the industry come in to see what is happening in other countries, whether shortages are coming, and what possible new plans can be implemented."* Participant 4 of Case 2 agreed as they highlighted, *"We are also part of the Pharmaceutical Manufacturers Association, where, as a group, we share information on anything new, be it relating to pharmaceutical manufacturing, or relating to other aspects of business, marketing, and finance."*

5.4.2.3 Tapping into developments in science and technology

The scanning phase can give insights into the new customer trends and the type of external science and technologies that are coming online. Participant 6, Case 2 said, *"Scientific and regulatory bodies like Food and Drug Administration (FDA) of America, the World Health Organisation (WHO), International Society for Pharmaceutical Engineering (ISPE) and various other bodies"* that they subscribe to are good sources of information on *"any changes … they communicate and enquire how we see the review that they want to do on certain drug guidelines."* Participant 8 added that the international organisations assist the firm in staying up to date with new developments in scientific know-how. *"We get notifications, and we then settle on business development in line with what's current and the future direction of the scientific movements and information we acquire through those interactions."*

5.4.2.4 Tapping into complementary products and new ventures

The scanning processes also look at tapping into complementary corporate new ventures and products.

> *"Sometimes when we go out for workshops, we see new trends that are happening, and we ask how we can harness them. Then we sit as a team, we look at the business, we look at our capabilities and we look at whether we can do certain things." (P9, Case1)*

One opportunity that the fertiliser manufacturing company is evaluating as a future project is blueberry production. The firm has embarked on a process to assess whether they can invest in crop production.

> *"We look at the requirements for production. What fertilisers and chemicals are required? There are specifications in terms of the quality of water which you need to provide. Are we able to do it and do we have the land to do the project?" (P2, Case1)*

The corporate strategy document for Case 1 stated that the company gave a detailed overview of the strategy to enter new markets and *"export horticulture crops in the healthy food groups such as ginger, garlic, and berries to generate foreign currency revenues"* using complementary products in blueberry, garlic and ginger production which will be earmarked for the export market.

5.4.2.5 Benchmarking against competitors

Benchmarking is a technique that is widely used to ensure that a company and its products meet the standards of its industry and to find ways to produce better products. Participant 8 gave an overview of what Case 2 aims to achieve when scanning the environment against the competition. *"When we are competing, we need to reduce costs. That's when we seek newer or better technologies to reduce costs to be competitive. One of the key success factors for a generic manufacturer is we need cost competitiveness."*

Participant 12 of Case 1 also indicated that it is not a process of just taking what the competition is doing and copying.

> *"We are always alert on what's happening with our competition. Have they changed prices? Can we match the prices that they've changed to? … We are not quick to just change prices, we need to check whether we will still be profitable or are we still going to make a margin if we try to compete with this competitor."*

5.4.3 Decisions on profitable opportunities

The decision-making processes for deciding the profitable ventures and products that the firm should seize were interesting as quotations related to identifying profitable opportunities in decision-making processes, managerial cognition, and capacities, and profitable new ventures were mentioned by participants as key in determining profitable new ventures and whether the business should capture the opportunity, Table 7.

Table 7: Sensing themes for deciding profitable opportunities

Ranking	*Determining profitable opportunities*	*Participants*	*Groundedness*
1	Decision-making processes (DMP)	9	15
2	Managerial cognition and capacities	7	15
3	Profitable products and new ventures	6	15
4	DMP intuition and gut feel	9	12
5	Directing internal R&D and new technologies	5	7

Source: Author's own

5.4.3.1 Decision-making on profitable opportunities

The processes and the actions of managers in determining the profitable opportunities that need to be seized and captured according to Participant 4 are that *"we have an internal document called a project approval form…marketing is the one that proposes since they are the ones that have monitored and discovered the opportunity. We then write a project summary…of the new products."* Each new product is treated as a project. "That is what we call projects here because we make products and sell products." The marketing team then makes justifications by *"writing a summary of why this particular product" should be pursued and "what is it used for, and why do we think it's necessary?"* for the product portfolio. Participant 6 added that once the project evaluations are done "we implement through a team of relevant people to the project who form a project team and they do their timelines, they get approval, they implement" the strategy.

5.4.3.2 Managerial Cognition and Capacities

Another well-grounded theme under the sensing capability was that participants emphasised the importance of management's cognitive capabilities in guiding new product development in the business.

> *"[E]executive management like I said earlier on, are people that have MBAs…and have the technical skills and they have managerial skills. They can lead others, as far as business development is concerned, be it formulation of products, be it purchasing of equipment, be it capital expenditure approvals." (P3, Case2)*

A core competence that was recognised as critical was the ability to make hard decisions and formulating new strategies that allow the firm to remain profitable Participant 6, explained that strategic decisions can be made to exit a market segment that is no longer profitable *"we cannot compete much with the huge manufacturers of the ingredients when we are compared to Indian companies"* who make cheaper generic drugs and have huge production capacities. Participant 1 highlighted their ability to learn and repurpose knowledge *"the experience taught us a lot, although we dumped the communicable drugs, the knowledge and the research on new products and methods of doing them we acquired"*

Senior management was expected to be able to facilitate relationships.

> *"The ability to maintain relationships is one of the most important competencies anyone on our team should have, ahead of academic qualifications, because the customers are the key source of information, be it on products that need to be changed, or new products that need to be developed." (P4, Case2)*

Participant 7 in Case 1 highlighted the need not to follow competition blindly "*One company from South Africa came and opened branches all over. We did not follow suit, we just held back…we look at the potential of an area rather than just following the one-eyed man or woman.*" Participant 9, Case 1 highlighted the how they too were faced with tough decisions when the market changed and they had to manage and recruited and trained critical people during the land reform programme. "*We realised that there was a threat and the volumes were going down*" Case 1 managed human resources by allowing natural attrition "*we stopped recruiting, we just recruited in the critical positions. And then we started doing training of those key people*."

5.4.3.3 Profitable Products and New Ventures

Once the firm has decided which products need to be developed there is a process of being able to delineate and break down the requirements of the new product or new venture to make timely decisions to exploit the new products. With COVID-19 at play, Participant 2 spoke of the need to develop a high-analysis fertiliser with a new zinc micronutrient *"that when you buy a bag of fertiliser, it has got an additional macronutrient zinc… and that macronutrient is carried to the fruit which then is consumed by the individual."* However, what was interesting was that Participant 7 from the same case organisation as Participant 2 highlighted that they are sometimes lagging, *"that is why I sometimes feel we might be lagging behind other companies that just go into the market and just throw products into the market."*

5.4.4 Identifying Threats

The mitigants of threats that undermine and negatively impact strategies also need to be sensed and there were four themes that participants highlighted to be major sources of threats in the operating environment, see Table 8.

Table 8: Sensing processes for identifying threats

Ranking	*Processes and techniques for sensing threats*	*Participants*	*Groundedness*
1	Threats - Competitive environment	6	11
2	Threats - External science and technology	3	5
3	Threats - Government legislation	2	4
4	Threats – Competition and complementors	3	4

Source: Author's own

Threats of competition ranked the highest with eleven quotations referring directly to or inferring the threat to future business initiatives were mentioned by 6 participants. The spoke about the opportunity to serve competitors as customers and how this may threaten future business strategies.

"Sometimes a threat can be an opportunity. We have got a client of ours who is a competitor. We do products for them because they can't do those products. They go, they market them, and they grow their market share. Yes, we would have got business, but now it's more like we are feeding the lion that is going to eat us one day." (P7, Case1)

Furthermore, Participant 7 emphasised the short-term nature of such initiatives; *"…because with the volatility in this environment, sometimes you do certain things short-term."*

The threat of advancing external science and technology such that the firm is not able to compete was mentioned by Participant 1 with regards to the dynamic nature of technological developments in the drug industry which they have to adopt and comply with.

"Treatment guidelines are set by WHO and governments adopt them, and they are regular changes, and some require capital equipment and changes in the way you do things…to remain in the game you have to be compliant, otherwise, you're kicked out of the market." (P1, Case2)

To mitigate the risk, *"we have been making progressive investments in achieving compliance levels set by the WHO".* Participant 5 stated that in their industry, developments in scientific advancement are pushing the business to discard old formulations that are deemed to harm the environment. Participant 5 further elaborated that, *"…because of environmental concerns, there has been an outcry in terms of the pollution…so people are moving into fertilisers and chemicals, maximize their efficiency so that any waste to the environment that is generated is virtually minimal."*

These developments require *"changes in terms of technologies to do with production equipment and technologies that enhance efficiency at the user level."* The threat of government legislation was cited as difficult to anticipate in the local environment with Participant 10 alluding to the frustrations of regulatory compliance.

"When the government says the currency has changed, tomorrow morning, you're going to be using this currency, we comply, sometimes to our disadvantage…You then pay the cost for compliance; you fail to meet your sales volumes because your products are probably not attractive anymore in certain customer segments." (P10, Case1)

Another pronouncement that is a threat to the fertiliser industry is the government opening up the industry which is currently semi-closed to competition *"if the government then opens the borders, we may not be able to recoup the investment on the new plant because when you invest you are also making certain assumptions about the market and the legal environment."*

1.1.1 Summary of results pertaining to RQ 1

In order to understand how managers in manufacturing firms identify opportunities that inform decision-making and give rise to firm performance in an unstable macroeconomic environment the summary themes for sensing capabilities were presented in Figure 7. The dominant themes that demonstrated managers' ability to deploy the dynamic capabilities of sensing were *sensing for new trends and patterns, decision on profitable opportunities,* and *threats and decision errors.* The results show that *Sensing for new trends and patterns* supported scanning techniques, including internal organisational scanning and appraisal of competencies and environmental and industry appraisal techniques. The second most grounded theme was managerial *decisions on profitable opportunities*, influenced by the managers' cognitive capabilities and non-cognitive behaviours of intuition and gut feeling. Combining these decision-making processes leads managers to make decisions based on technical and scientific analysis, while the heuristics of cognitive sense-making enhance the sensing capability. The third theme was *sensing threats and mitigating decision errors*. Threats emanated from the competitive environment and the impact of competition and complementarities on the firm's strategic objectives. Despite the highly regulated environment, participants were more concerned with the threats of a competitive environment during the sensing phase of decision-making than regulatory and legislative factors. Benchmarking scored relatively low, and it was not recognised as an emerging theme in the data collected.

5.5 Results: Research question 2

What decision criteria inform the restructuring of the firm's resources to achieve strategic business objectives?

Managers in unstable macroeconomic settings have to face the reality of constraints in restructuring assets to seize opportunities and threats that arise during the multi-dimensional environmental scanning processes that have been described above. The process of seizing opportunities and threats is a dynamic capability that inspires quick responsiveness by managers to sense key developments in the operating environment and formulating appropriate actions that guide the firm in the strategic direction that it should go by utilising the assets and resources that are available for use. The schematic diagram below (Table 10) presents the three main themes that emerged and the sub-themes under each seizing capabilities themes. It shows that decisions on resource reallocation is related to a number of seizing capabilities, with knowledge acquisition exhibiting the highest level of grounding. The figure also shows the importance of alliances and partnerships in seizing strategies, while seizing long-term opportunities and technological acquisition was linked to flexibility, adaptation to change.

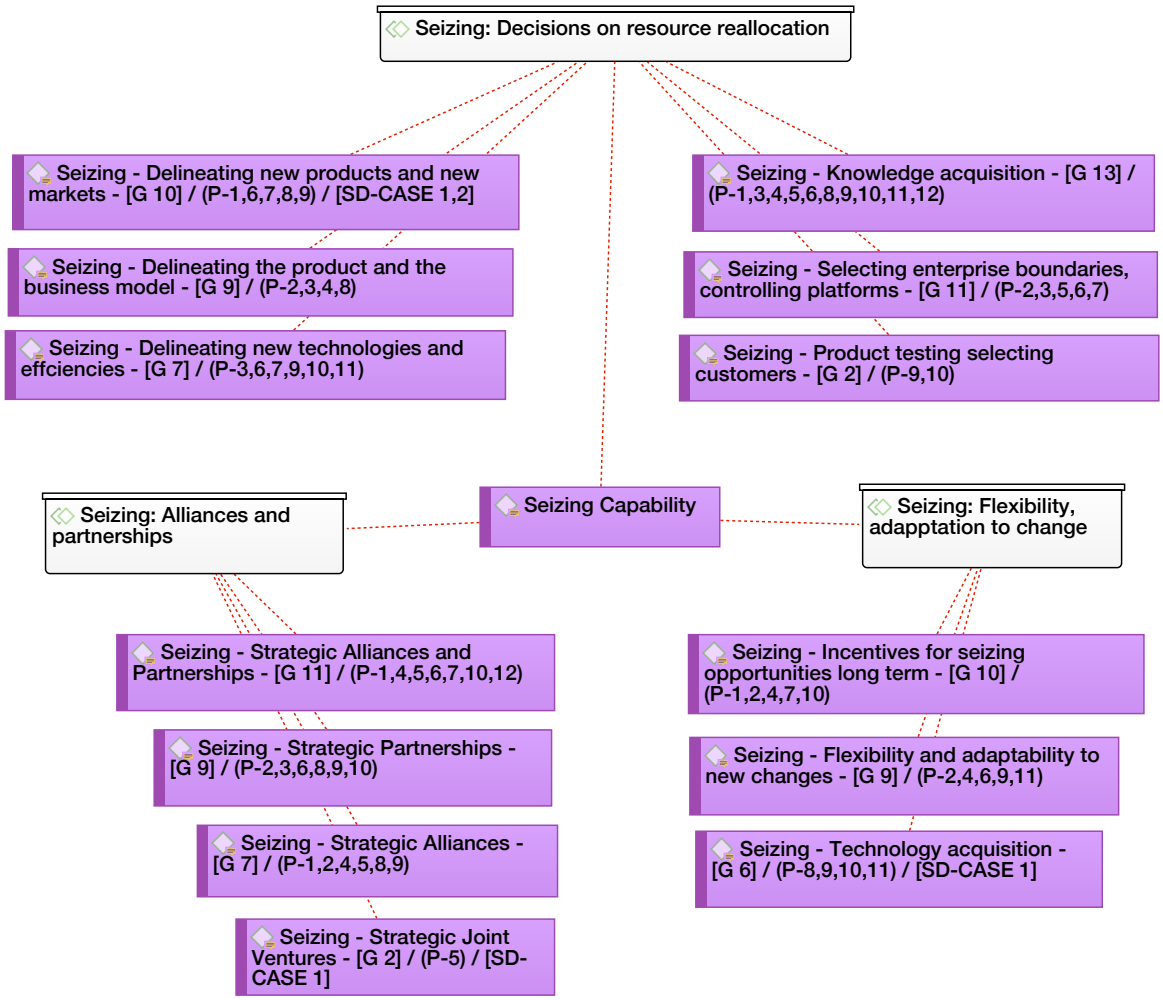


Figure 8: Schematic representation of the themes for seizing capabilities

Note: G = Groundedness, P = Participant, SD = Strategic Document

Source: Author's own

5.5.1 The Decision Criteria That Inform Restructuring of Resources

The operational definition that was applied to seizing capability dimension is *"mobilization of resources to address needs and opportunities and capture value from doing so, 'seizing'."* (Teece et al., 2016, p. 18). The seizing capability response requires flexibility, responsiveness, and adaptability of the firm's managers and employees. Table 9, below, shows that six major micro-foundations underpinned the sizing, capturing, and extending of the firm's resource structure emerged from the data knowledge acquisition was firmly grounded in the data. This finding is consistent with the research question, which sort to uncover how managers combine internal knowledge and external knowledge to make decisions on seizing opportunities.

Table 9: Themes decision criteria that inform restructuring of resources

Ranking	*Themes of decision criteria that inform restructuring*	*Participants*	*Groundedness*
1	Knowledge acquisition	10	13
2	Selecting enterprise boundaries	5	11
3	Delineating new products and new markets	5	10
4	Delineating the product and the business model	4	9
5	Delineating new technologies and efficiencies	6	7
6	Product testing, selecting customers	2	2

5.5.1.1 Knowledge Acquisition

The first foundation was knowledge acquisition. This speaks to the seizing of technical knowledge that informs the decisions that managers must make for them to reach decisions regarding the firm's resources. Knowledge acquisition was said to be a key component of decision making with participants mentioning the impact of knowledge acquisition on resource allocation and asset recombination.

Participant 3 Case 2 debunked the notion of intuition and gutfeel because the *"thing about pharmaceutical manufacturing is that it is an academic business."* It requires scientific rigour therefore *"we need people that are knowledgeable, people that are learned and people who undergo continuous training"* to learn new technologies. Knowledge acquisition ensures that *"people are always at par with current technologies and current knowledge"* to formulate new and novel molecules. To concur Participant 11 stressed, *"especially in the field of pharmacy…for us to be able to make a new drug, they need to know what they are making."*

Participant 5 in Case 1 said, *"Learning is key, not just academic learning, but learning everything, the rules of the game and how to compete."* The firm is constantly renewing itself by bring in new knowledge *"with new guys who are coming in, especially the guys that we bring in from the universities, who perhaps have more of a feel of new technologies and are hungry for new developments in knowledge and technologies."*

Participants 5 and 10 in Case 1 pointed out the importance of knowledge acquisition in engaging farmer training and knowledge sharing that was assisting the Firm to create new products.

> *"We go and visit and just see what the real issues that they are having in farming are. We come back, and then we look at those problems and…the pool of knowledge that we have, and the pool of our associates that we have in various countries and in various areas." (P5 and P10, Case1)*

Participants pointed out that sensing processes will lead to exploring "what are the possible solutions?" The important thing is "we internally try to develop solutions and adapt the best situations for the problem."

Participant 6 Case 2 said that *"a decision is as good as the quality of information that you have…So, knowledge acquisition is very important, a key component of decision making."* Participant 8 Case 2 added that the business needed to possess the right people because it *"requires skills and competencies that you can only get from the acquisition of new knowledge."* Participant 9 highlighted how knowledge acquisition was a critical part of management profiles because managers needed the cognitive ability to navigate the operating environment *"It's a very important aspect of… management, especially in the Zimbabwe environment."*

5.5.1.2 Selecting Enterprise Boundaries

The second foundational good decision-making criterion is management's ability to select enterprise boundaries. This involves the processes of ensuring the appropriateness of action and the decisions that calibrate the way specific assets are being used. Participant 1 explained how in Case 2 the *"Quality Assurance Unit, Research and Development team and Regulatory Affairs are where we have put most of our brainy people, our Ph.D. guys."* The participant went on to demonstrate how this function required a highly learned person, *"…three months ago we had to forecast on certain things we want to emphasise …doing the scientific validation of processes…to meet all the necessary regulatory requirements…"*

Participant 3 stated that managers in Case 2 assess *"what benefits will be acquired from the new technology relative to old technology."* The benefits should result in being *"more efficient or…more profitable."* The incentive for the firm to carry out asset reconfiguration and adoption of new technology *"can be driven by changes in customer needs"* therefore decisions too according to Participant 2. *"We take decisions for resource allocation and assets based on the market, what the customers want from us as an organisation."* They went on to explain that *"once we identify what the customers want as a company, we can combine the resources to exploit the opportunity."*

Participant 6 gave an overview of *"selecting new technologies that are coming in, are they going to give us the edge that we want in terms of quality, in terms of efficiencies. If so then we can embrace them."* This also ensures that the firm's production enterprise is also controlling bottlenecks in production setups. Participant 7 expressed that this is done through the process of *"debottlenecking the plant to see what needs to be improved, what is now the new trend on the market."* Management then assessed the new trend to evaluate *"the benefits*

of changing the procedure or the way some things are done, which is reviewed by relevant people, including compliance, and the changes are implemented."

5.5.1.3 Delineating customer solutions and the business model

The results from the participants showed that there are two aspects to how decisions are made: by selecting products in markets that have been studied and evaluated, and delineating products that result in a change to the business model in products and scientific technology that remodel a product to enhance market penetration. Participant 1 said that there is a process of assessing what the best practice is and how quality is evaluated,

"…we want in terms of quality, in terms of efficiencies." If this can be achieved with the new technologies, *"then we can embrace them…such as co-packing (new drugs) our products as part of the innovation to lure new customers or enter new customer segments."(P1, Case2)*

New product architectures are built and co-created with the customer.

> *"Then in terms of new product and selecting target customers, we have introduced some new products onto the market which were a result of new engagements where we give free advice to farmers. We then take feedback from the farmers and come up with products that meet their requirements." (P4, Case1)*

Participants 2, 4, and 9 gave accounts of new innovative products for farmers. Participant 4 stated, *"We have had the potato fertilisers, the vegetable fertilisers coming through that engagement with the farmer."*

To enhance revenue structures in a resource-constrained macroeconomic environment, Participant 8 spoke of the firm renewal process. *"That's when we seek newer or better technologies to reduce costs to be competitive. One of the key success factors for generic manufacture is that you need to have cost competitiveness."* Hence as Case 2 worked on cost competitiveness, their strategy document states that they aim to introduce eight new products to the market every two to three years. This was also emphasised by Participant 6 of the same organisation.

5.5.1.4 Delineating the business model

Case 2 presents a unique case of a firm that has gone through two evolutions in restructuring its business model. The first was, *"In the 80s when we started, we used to make brake fluid before the pharmaceutical business was established."* Before the pharmaceutical licenses were obtained *"we dropped brake fluid and went to personal care which is now being dealt with by a Case 2 subsidiary."* The pivot came when the pharmaceutical license was registered.

Participant 1 described how they were able to change their business model by recognising inflection points or changes in the core product market in which their business was anchored. *"For us, it was no longer an opportunity. Because it was no longer necessary to continue, we decided to dump that specific product linked to communicable diseases."* Participant 4 highlighted the decision made to disinvest from the communicable disease market. *"What we just don't want is to continue investing in equipment, product development, and so on in this market."* Furthermore, they changed their business more and restructured their resource base. *"We forged a strategic alliance with a company, a foreign company"* to manufacture the product because of the cheap cost structure the foreign company has. How flexibly the firm can respond to changes to capture value was also assessed by analysing the responses to the research.

5.5.2 The firm's flexibility and adaptability

Flexibility and adaptability are two capabilities that capture how firms build resilience and sustain growth over a long period. Table 10 shows that incentives for seizing opportunities long-term and flexibility and adaptability to new changes was mentioned by the most participants and had more or less the same level of groundedness.

Table 10: Firm's flexibility and adaptability to change

Ranking	*Flexibility and adaptability to change*	*Participants*	*Groundedness*
1	Incentives for seizing opportunities long-term	5	10
2	Flexibility and adaptability to new changes	5	9
3	Technology acquisition	4	6

Source: Author's own

The ability of the firms in the manufacturing sector to recombine and reconfigure resources will result in asset optimisation, which leads to exploiting resources, improving efficiencies, and exploring potential new ventures.

5.5.2.1 Incentives for seizing new opportunities and long-term value

Managers in the case firms also spoke of the need to use their knowledge of the business to make business model changes when they are needed to enable capturing of value from core operations. Participant 1 underscored the need to stop the further development of non-core ventures *"we dropped the brake fluid business, and we went into personal care products, which are now being produced by a subsidiary that was incorporated to take over the development of a wide range of quality personal care products."* This action was another development that helped Case 2 grow into a multiple subsidiary group, *"then we (Case 2) concentrated on the main core business (pharmaceuticals) in this strategic business unit."*

Businesses will engage in new ventures, according to Participant 2, to increase foreign currency generating capacity. "*The objective at the end of the day is to raise additional foreign currency for the business through the export of blueberries."* Participant 4 attested,

"Finance gives the green light that the project looks like a profitable product, it ticks all the boxes in terms of the hurdles that it needs to go through…if it is a product class which is likely to have revenue generation for 15 to 20 years to come, like a drug for pain." (P4, Case2)

Participant 7 described how the product development and research and development teams developed a specialist fertiliser for a farmer which has become one of their in-demand products. *"We did a macadamia fertiliser for a particular farmer and it's now one of our products…we have registered it…We did a banana blend for a client which other clients now want, and we are now marketing those products."* Some of the initiatives *"come from the research and development team. Once they confirm expected yields and the farmers are satisfied with it, we can launch it into a fully-fledged product."*

5.5.2.2 Flexibility and adaptability to change

Participant 2 in Case 1 discussed that the firm must manage change *"We discussed earlier on that this is a dynamic environment, things do change."* They went on to state, "*Change is not easy, but the philosophy which we do have is you need to move with the change."* He went on to state an important aspect, *"Any new development we then discuss as a management team every week…where we then ask what new issues, we need to take into consideration in terms of making our strategies work."*

In Case 2 Participants 2 and 4 implied that changing their business model was imminent because the *"World Health Organization kept changing treatment guidelines for communicable diseases every three to five years."* This made the business model unviable.

> *"And we felt, no, this is not the kind of business we want to be in, because we would have invested in equipment, invested in marketing materials. Maybe by the time your drug comes onto the market, the lifeline or lifespan of that drug will be at the tail end." (P1 and 4, Case2)*

Participant 1 added that though the decisions are hard "*We dumped that business and that's when we started looking at diabetes and blood pressure medication."*

In terms of the regular pronouncements that come through from policymakers and regulators, Participant 6 was quick to say that they are responsive and flexible in responding to environmental changes. *"I think the team is very flexible. Let it happen now, let them announce now, and in the next five minutes we would have reported to the boardroom."* Participant 11

expressed, *"We are very agile, as we sit down and discuss and set plans into motion…we are not leaving our customers in a place of need…because we believe in repeat business."*

Participant 9 in Case 1, painted a good picture of the disruptions that have occurred in the agricultural sector over the years. These have caused Case 1 to be adaptive and responsive to change. First, the land reform. "*We had this big market, and we were comfortable with the volumes we were selling…then the land reform, the disturbances…we ended up with a shrinking market."* The management team had to decide to adapt and reduce the firm's human capital levels to the levels that were in line with output. Revenue base shrunk because *"the volumes were going down, we then moved away from permanent employees within the confines of the labour law…through natural attrition…we stopped recruiting, we just recruited in the critical positions."*

Participant 5 went on to further explain that the way they have implemented training allows for employees to be flexible and can be moved around.

> *"It has been like that, we can just move people, and even the talent, what we've done is we tend to…train them to be all rounders rather than people who are good at specific skills, that is people who can adapt to new environments. And we have also been moving people around so that they become more adaptable to any new changes that come in."*

5.5.2.3 Technological acquisition

When seizing opportunities that come in the field of science there is the need to capture value by upgrading to new technologies to increase efficiencies and increase capacity. Participant 8 in Case 2 highlighted that when *"faced with limited resources for acquiring new technologies, one must look at which one has the largest impact in terms of competitiveness, in terms of volumes, in terms of profitability, and mostly we acquire to increase capacity."* However, Participant 11 went on to state that these upgrades are expensive to adopt. *"If we are looking at our full plant, we are looking at a million dollars to have that plant upgraded."*

Another area of technological advancement Participant 9 pointed out was the area of product enhancement. *"We look at the technologies that are out there, and we say this one is critical, this is important, we look at our competition, if we leave this gap here, somebody else can move in."* The participant went on to state that *"the beauty of fertiliser, is that the compounds are basic"* innovation comes when *"we just then put in these add-ons, so that you keep abreast…we try to capitalise, and continuously invest in equipment to make sure that we survive and innovate"* around the developments in the industry. Participant 10 emphasised that with the new technologies comes the responsibility for the environment, a sentiment that was highlighted by Participant 5 when they were discussing threats of pollution that their firm

has to deal with in the fertiliser industry. *"The fertiliser value chains all over the world are challenged to reduce environmental pollution that comes as a result of either production of fertiliser products or use of fertiliser products."*

Participant 10 highlighted that global trends always allow the firm to see the technology and innovation gaps in the local market and make the decision that *"this technology presents a huge opportunity here locally…and you take them on board"* such as the technological advancements coming out of the global German company *"BASF SE, which are quite critical"* in fertiliser production in the environmental space.

5.5.3 Strategic alliances and partnerships

In dynamic macroeconomic environments where there are consistent changes to technological advances, one way of seizing and capturing opportunities and creating value is to enter strategic alliances and partnerships. These arrangements are one way in which a firm can renew and reconfigure the resource base of the company. An alliance or partnership is a vehicle that enables the firm to acquire resources, technologies, and access to markets. Knowledge can be obtained from R&D alliances with external parties and formal collaborations to extend externally developed technologies to the business. Strategic alliances and partnerships were mentioned by at least 11 participants in one way or another, see Table 9. The one participant who did not mention partnerships was a participant who is in Human Capital Management. The discussion below will look at the three forms of arrangements that are accessible to the manufacturing firms in this study.

Table 9: Strategic alliances and partnerships

Ranking	*Strategic alliances and partnerships*	*Participants*	*Groundedness*
1	Strategic Alliances and Partnerships	7	11
2	Strategic Partnerships	6	9
3	Strategic Alliances	6	7
4	Strategic Joint Ventures	1	2

Source: Author's own

5.5.3.1 Strategic partnerships

In restructuring the firm's resource base, a way to achieve results where a company is lacking resources or the capabilities to exploit new emerging opportunities is to enter into alliances or partnerships with suppliers, logistics companies, and distribution networks.

> *"The key result area for the Managing Director and respective business unit heads. It is their responsibility, for example, marketing has to find the right alliances for product*

distribution…for supplies and logistics, they have alliances in terms of inbound and outbound products with suppliers." (P2, Case1)

One such strategic partnership arranged by the executive management was with a seed company that recognised opportunities in a neighbouring country they were operating in and invited Case 1 to supply the market with their products.

"These partners outside are not necessarily fertiliser customers, some of them might be seed companies with whom we do a joint venture. They see an opportunity then they say in this country, we have an opportunity. There is a demand for this, please, may you bring your product, or we need certain services from you so that we can do this." (P5, Case1)

Participant 3 in Case 2 underscored the benefits of external partners in their industry as they have partners in *"India and China"* where they buy their equipment and raw materials*, "they always invite us for training on new trends. So other than researching on our own, we also have the privilege of being advised of what is new, and we can get training on new drug formulations."*

Participant 6 advanced the conversation from the perspective of the pharmaceutical industry and highlighted that their partnerships are with the drug companies that formulate *"the molecules that we deal with. We formulate molecules that would have been tried and tested in the developed world."* Therefore, the innovation that the firm brings is to "acquire active pharmaceutical ingredients" that enables them, for example, *"to create a generic drug from a drug Pfizer"* would have developed. *"So those will be our partners and alliances in creating our value."*

Other partnership arrangements are engagements that look at supporting the operations of the business especially the plant, raw materials, and spares. Participant 9 mentioned, *"We get most of our spares from South Africa…the critical ones, the belts, the chains that we need. We have strategic partnerships where they ship them here in advance…to make sure that they keep us running"*, o cut on production lead times.

"Without partnerships with suppliers, you will not be able to navigate this environment. You have partnerships with suppliers who bring in raw materials, and then you promise to pay them later. These materials are put in bonded warehousing or under collateral management so that when financial resources are available, there's no time lag in terms of raw material deliveries and production setups." (P2, Case1)

5.5.3.2 Strategic alliances

Global alliances are treated as critical in the food security space in terms of fertilisers and chemicals.

"A lot of these companies are in China, parts of India, and maybe some in Eastern European countries. So, we work with them to supply some of the products, some of them are supplied as finished products, some of them are supplied as technical products which we use for our formulations here locally." (P10, Case1)

Case 1 has managed to enter into distributorship alliances with *"multinationals that are well invested in food security technologies, so we are looking at companies like Bayer and Syngenta."* These relationships give the business technological capacity *"We are just beneficiaries of some technologies we are then forced to go into…exclusive distributorship arrangements"* for these global players to bring the products to the local market.

The case firms also have local alliances with distribution channels which gives them the exclusive rights to have their products carried by a particular retail franchise.

"And also, in terms of the distribution of our product, we do have partnership alliances, with third parties… who solely distribute our product for a commission. The nature of our industry is that you need alliances, be it for raw materials, be it on the final product, to create value. Without those partnerships and alliances, we will not be able to create any value at all." (P10, Case1)

5.5.3.3 Strategic joint ventures

None of the case firms in this study have ever entered into joint venture arrangements. However, as discussed in section 5.4.1 and section 5.5.2, Case 1 has been exploring emergent opportunities in the farming sector. Their strategy document highlights that they have identified potential partners and are putting in place a strategy for capturing these opportunities by 2023.

5.5.4 Summary of results pertaining to RQ 2

This research question sought to understand how managers use their cognitive abilities to combine internal knowledge and externally acquired knowledge to inform decisions on which opportunities are profitable for capturing value. In Figure 8, the diagram summarised the results, which explored the seizing dimension of dynamic capabilities. Seizing opportunities were anchored in managers' decision criteria that informed asset allocations, recombination, and restructuring. Three highly grounded sub-themes were identified for capturing opportunities and deploying resources, these were *knowledge acquisition* with 13 mentions, *selecting the enterprise boundaries* with 11 mentions and *delineating new products and new markets* with ten mentions. The second theme was, *seizing: flexibility, adaptation to change*, and is related to firm flexibility and adaptation when changes occur in the operational environment. Two highly grounded sub-themes emerged, firstly the incentives for the firm to

capture opportunities which participants mentioned ten times and secondly, the flexibility and adaptability of firm's to capture the emergent opportunities that result in firm performance and sustainability which was mentioned nine times. Finally, the theme *seizing: alliances and partnerships* was strongly supported was the theme for fostering strategic alliances and partnerships to enhance the firm's resource base. The above themes will be explored and critiqued against the theory in Chapter 6.

5.6 Results: Research question 3

In what ways is knowledge assimilation a key capability of managers operating in unstable macroeconomic environments?

The research question aims to discover cognitive and non-cognitive behaviours of the managers in the manufacturing firm that can be defined as unique and non-replicable. Dynamic capabilities of a learning organisation are hard to imitate and therefore, the foundations of competitive advantage will strengthen the firm's ability to acquire new knowledge and use it to meet the commercial objectives of the firm. Below, Figure 9, is the schematic diagram with three main themes and sub-themes.

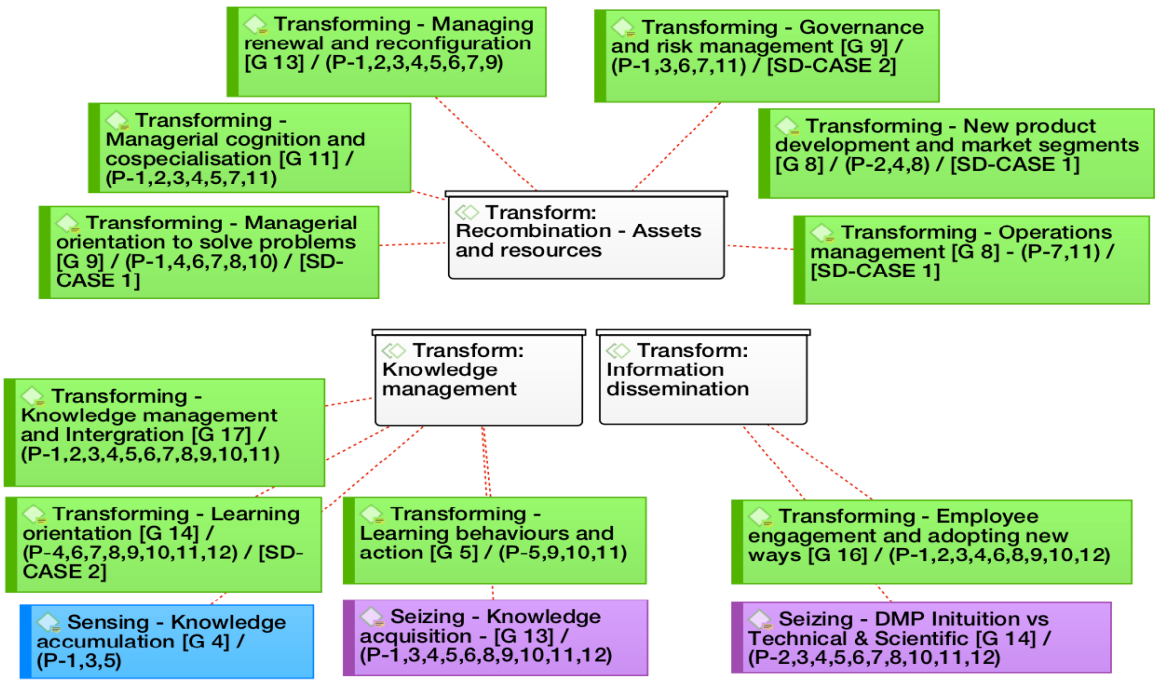


Figure 9: Schematic representation of the themes for transforming capabilities

Note: G = Groundedness, P = Participant, SD = Strategic Document

Source: Author's own

Knowledge management and asset integration had the highest groundedness with 17 mentions and associated *with knowledge management and learning orientation* with 14 mentions. Participants emphasised the importance of knowledge acquisition and integrating assets as part of a critical process for making good decisions on assets combinations.

5.6.1 The Transforming Capabilities

The operational definition for the transforming capabilities is continued renewal ('transforming') or transfiguring to new assets structures and resource architecture.

5.6.2 Knowledge management and learning orientation

The *"knowledge management capacity"* is the firm's ability to transform its resources, restructure and realign to meet the demands of its customers. This creates the capacity and strategic focus to exploit internally generated knowledge and combining with externally acquired knowledge. Knowledge sharing integration and transferring for management is to share with a larger network of employees in the firm who have the competencies to implement the changes required for transformation and exploitation.

The sub-themes that emerged under knowledge management were captured by the knowledge which is possessed and managed by managers to integrate strategies to exploit opportunities, see Table 11. The second was the learning orientation of the organisation in acquiring new knowledge and the behavioural intentions of managers, and employees. The ability to renew the resource base is a skill that will enable firm renewal and sustained growth over a long period. The code for knowledge management was observed to occur together and simultaneously with the code for sensing and knowledge accumulation and also seizing and knowledge acquisition.

Table 11: Knowledge management and firm decision-making themes

Ranking	*Knowledge Management*	*Participants*	*Groundedness*
1	Knowledge management and asset integration	11	17
2	Learning orientation	8	14
9	Learning behaviours and action	4	5

Source: Author's own

5.6.2.1 Knowledge management and asset integration

Knowledge management was highlighted as a key component of business model restructuring. Participant 1 pointed out that what was learned in the personal care business was useful in the pharmaceutical business. *"We went out of personal care which is now being*

dealt with by our subsidiary company…concentrated on the main core business of pharmaceuticals in this SBU. So, it has been a journey of changing things."

The use of old and new knowledge in the fertiliser and chemical industry was key as it enables the firm to serve two types of customers.

> *"Then you have new people who are coming through and they want a new product. A typical example, if you look, low analysis fertilisers are used by most rural people or most peasant farmers…when you look at the commercial farmers, they have evolved to new fertilisers…So, we are in the process of launching a high analysis maize fertiliser or a cereal fertiliser" (P2 and P7, Case1).*

Participant 8 pointed out the rich knowledge base in Case 2 saying most of the key people *"are more than 10 years in the business, they know their work. They've institutional knowledge."* The way the firm works is that managers acquire new knowledge continuously. *"They also acquired new ways of doing things through their capacity to learn because they are both academic and also have practical knowledge,"* which has helped the organisation to go through a process of evolution as mentioned by Participant 1 from *"doing brake fluid…to personal care products…concentrating on the main core business of pharmaceuticals."*

5.6.2.2 Firm Learning Orientation

The learning orientation of the organisation is underpinned by the firm's ability to use old and new knowledge to develop new processes and procedures. Managers can drive the right routines to improve efficiencies. One element of knowledge management includes the simple processes of knowledge accumulation that can support firm performance.

The practical knowledge that is at the firm's disposal *"lies in individuals and so we sometimes lose,"* Participant 7 pointed out. *"Unfortunately, there has not been a deposit or repository for knowledge, where you have a knowledge management system, where whatever you want, you can just go there and get it, instead of it residing in individuals"* because when they leave "through natural attrition" the firm cannot access that knowledge anymore.

The managers in Case 2 have a personal orientation towards knowledge acquisition. Participant 7 said, *"We acquire knowledge through various means, and I think people have gone on to do post-graduate training at their own cost."* Participant 3 shared how Case 2 approaches continuous learning so that employees and management are engaged in continuous learning. They carry out an annual human capital skills assessment which seeks to evaluate *"what the most recent developments in that field are."* Participant 3 went on to explain, *"…then you prepare your training protocol for acquiring relevant skills in your field."* Another aspect of learning comes from the process of knowledge sharing wherein Participant

4 emphasised that *"even learning from others and adoption of new skills"* is also key in bringing in innovative collaboration. Management is given latitude to attend *"workshops which are relevant… because they want you to bring new knowledge."*

5.6.2.3 Learning Behaviours and Action

Participant 2 discussed the organisation's integrated behavioural system. *"We do have what we call behavioural based system BBS."* It is designed to encourage and reward employees who adapt to new initiatives. *"…we also have a situation where we'll also reward employees as a way of incentivizing them to take on board new concepts."* This aids in the firm's endeavour to capture new opportunities.

Recombination of assets includes the combination of human capital and the physical assets that are used to innovate and produce.

> *"He studied engineering maybe back then in the early 90s. And, for example, my projects engineer who also studied engineering, maybe graduated less than a decade ago. I find that those two people, in as much as they are engineers, and one is senior to the other, the old engineer has got his strengths. The new engineer has also got his strengths. So, we have internal training without training." (P3, Case2)*

This has an impact on how individuals respond and react in combining old and new knowledge to create value for the firm is sometimes impacted by the age gap between incumbents. Managers then have to find intuitive ways to make the relationships work.

> *"The old engineers never did what we call AutoCAD drawing. They never did that. So, when we realized that the new era that we are in now is more modern, and engineering needs drawings that are done using the AutoCAD, we had to use those new guys to train in-house AutoCAD…even including those that are not engineers. Most people, relevant people, can now use AutoCAD." (P3, Case1)*

5.6.3 Recombination of assets and resources

Transforming and restructuring new business models and maintaining alignment between firm systems and strategy. There are mechanisms that managers can use to ensure that they reconfigure the firm's resource base for renewal and develop new business models that sustain the business, while continuously carrying out marketing approaches that bring in new customer segments and ensure that operational efficiencies are achieved.

Table 12: Recombination of asset and resource themes

Ranking	*Mechanism of managing transformation*	*Participant*	*Groundedness*
1	Managing renewal and reconfiguration	8	13
2	Managerial cognition and co-specialisation	7	11
3	Governance and risk management	5	9
4	Managerial orientation to solve problems	6	9
5	New product development and market segments	3	8
6	Operations management	2	8

Source: Author's own

5.6.3.1 Managing Renewal and Reconfiguration

Firm renewal can be achieved through the exploitation of mature products and the exploration of new products. The firm must renew the resource base through other strategic arrangements.

Case 2 was faced with a mature product whose formulation changed every two to three years in a market in which Asian generic drug manufacturers had become dominant with large scale facilities.

> *"So, what did we do? We forged a strategic alliance with a company in South Korea, that did not know the Sub-Saharan market. We advised them how to package the product so that it is price competitive in this market...It's manufactured there, it's their registration, it's their intellectual property." (P4, Case2)*

The firm was able to continue serving the market by "*bringing to the alliance table market knowledge, the ability to sell, and even assist with meeting regulatory demands of the African market."* Participant 4 emphasised that Case 2 is "*still selling these mature products, but just changed so that we pick them from somebody else."*

Participant 4 also pointed to the opportunity in selling complementary products.

> *"We also realize that a greater portion of the budget in hospitals goes to latex gloves because they are disposable, but there is no way an African company will be able to manufacture latex gloves and beat countries in Asia, for example, Malaysia and Indonesia, where latex and rubber are pretty much the mainstays of their industries." (P4, Case2)*

Again, in building additional revenue streams *"…what did we do? We allied with an Indonesian manufacturer to ensure that we get our latex gloves with our name, branded Case 2."* However, there is a cost to establishing these alliances or partnerships.

5.6.3.2 Managerial cognition and co-specialisation

The available knowledge that firms possess, their assets, and human capital in combination can have an inimitable character that cannot be replicated and is useful in creating a competitive advantage. Knowledge assimilation varies dependent on the length of service of key players. Participant 5 had similar input as Participant 3 in that human capital knowledge in the firm varies with the length of experience. *"There are a lot of new employees who are coming in, especially those that we bring in from the universities and train."* They are a catalyst for new innovations and bring new knowledge, hence we can *"combine old and new to meet farmers' needs, by finding solutions in-house from the pool of knowledge we have, and from the pool of knowledge from our associates in various countries, in various areas, we can develop possible solutions."* The Participant also emphasised, *"We develop the best solutions and adapt them"* to our environment.

Participant 9 highlighted how knowledge of manufacturing new products is harnessed by working *"hand in glove with that department (research and development)."* This helps the production team ensure processes meet manufacturing standards. The challenge is that competition is *"coming in with the different products, fertiliser is the same product but different formulations, different innovations. We have our research and development team, they bring the innovations such as slow-release urea, which is marketed to the farmers."*

Participant 12 spoke of the need for employees to be flexible to work in various functions and not just one role. *"Skills and changeability, let's say, instead of focusing on one area, someone is flexible to be reassigned to various sections."* Skills development and training are key issues.

5.6.3.3 Governance and risk management

Combining old and new knowledge is something that is a requirement in the science-based industries as Participant 8 highlighted, *"pharmaceuticals is science-based knowledge… and what we must meet what we call 'current' and then 'GMP' good manufacturing practices. The regulatory authorities are also always demanding new ways of doing things."* The Participant went on further by pointing out "we watch out for these pronouncements on the WHO website so that we continue to comply. The WHO website posts some warnings and information on raw materials and suppliers, and you have to keep watch of these developments."

5.6.3.4 Managerial Orientation to Solve Problems

Managerial culture should be that they resolve the challenges that the organisation is facing. Participant 7 believes that management in Case 1 *"should seriously solve the attrition problems that result in lost institutional knowledge."* Knowledge management is critical *"but I*

don't think we have taken it seriously as an organization." Participant 1 in Case 2 explains how management has initiated the change process that would have impacted the organisation's ability to be compliant. *"But if we had maintained the same structure, we would not have met the requirements of the changes which were now being prescribed through good manufacturing practice issues."*

Participant 8 described how the team in the firm solves problems. *"Well, first we do an RCA (RCA stands for Root Cause Analysis) together as a team. And when we have identified the root cause…we do what is called a corrective action, and preventive action."*

5.6.3.5 New Product Development and Market Segments

The development of new products requires that the firm innovates new products. Participant 6 explained how new and old knowledge combine in the wake of new diseases. *"New knowledge combined with old knowledge places new diseases in the category of new knowledge. Take COVID-19, for instance, people require vaccines."* However, the firm may not have the capabilities to take on the opportunity because *"we do not do vaccines, but those companies that produce vaccines jumped onto the new information of new disease, and they produced new products using the old knowledge of what they know about viral infection."*

New products are also developed from learning the tenets of existing external technologies. *"We can ride on the back of the existing technology; we take it to our research and development."* Reconfiguration of processes is key in capturing value from new products. Participant 8 added, *"Once the new formulations are developed, they are then registered and once the product is registered, we then do our internal technology transfer from research and development to the routinised manufacturing."*

Participant 9 highlighted that *"fertiliser, is a basic NPK product and is the same anywhere in the world."* The product has not changed but innovations are achieved in new product development and by using *"the knowledge that we have, even the institutional knowledge" to build "the innovations, the add-ons"* to make high analysis fertiliser.

Participant 9 pointed out the power of attending workshops and harnessing the new knowledge in technological advancements into the local market. *"Management attends fertiliser workshops, as members of the South African Association of Fertiliser Manufacturing Companies."* It is through these associations that new trends such as slow-release urea fertiliser which is a new product *"for maize replacing ammonium nitrate (AN)"* come to light.

5.6.3.6 Operations Management

Participant 10, Case 1 discussed the benefits of knowledge acquisition and new technology acquisition from the view of operations management. Operations management requires managers to have the expertise to combine and allocate human resources to drive the machinery. For *"the production side of things it is really important that we get the right skill set and also we must have the right mix of experience"* as far as the team that is enacting the production processes is concerned. *"It is quite critical for us; we are always on the lookout for new technologies and at the same time we look out on how we recruit key people to run the operations."*

Participant 1, Case 2 pointed out that operations management demands that they acquire the right knowledge for the firm to gain certification for *"good manufacturing practices (GMPs) which impact current changes to drug formulation…and the GMPs are the mainstay of the business."* Participant 8 highlighted that Case 2 has an assessment process which they carry out to ensure compliance *"because they consider operational processes and changes"* to pharmaceutical standards which are implemented by other countries, *"and we assess whether they are readily adaptable to our context, so we have to be knowledge-driven"* in making these operational decisions.

Participant 7 shared the perspective that *"as a management team in operations and production"* they try to resolve the issues of *"resource reallocation, where you are looking at what else can be used internally; use of internal skills, internal resources, rather than outsourcing"* because sometimes "*when you outsource, you lose control"* of the quality assurance process and undermine the strength of the resource base of the firm.

5.6.4 Leadership Communication and Information Assimilation

The way organisations are run hinges on the ability of leaders to communicate effectively with employees to inspire the employees they lead to act and advance the organisation's resource base and create new and novel ways of doing things. They also inspire employees to respond and adapt to new ways of doing things to avoid organisational inertia and decline. Leadership employee engagement was mentioned or referred to at least 16 times in the interviews that were carried out, see Table 13.`

Table 13: Information dissemination

Ranking	*Information dissemination*	*Participants*	*Groundedness*
1	Employee engagement and adopting new ways	9	16
2	Managerial intuition vs technical decision-making	10	14

Source: Author's own

Leadership communication was mentioned by 5 participants about 16 times. This was followed by the interesting topic of whether managerial decision making is driven by intuitions and gut feel or there is a logical cognitive process that is employed for managers to make informed decisions about reallocation of resources.

5.6.4.1 Employee engagement and adopting to new ways

Information dissemination is taken seriously since the information being relayed to the organisation has an impact on strategy execution. Participant 1 in Case 2 said *"We share information in this organization. If today I leave somebody who knows what I know and why. We freely share information and disseminate it to everyone so that we can plan and execute on our strategies"*

Participant 2 in Case 1 stated that in their firm the *"MD does quarterly briefs."* Participant 9 added that the MD would highlight, *"…this is how we've been performing, these are our issues this quarter, going forward this is what we think we need to look at, this is what we need to deal with. And he does that for all sites, for all employees, so people just gather, 45 minutes to an hour"* and there is a monthly *"structured Works Council, where management and employees come together, they do share issues pertaining to the business freely at that committee, everyone is equal."* This means that employees can *"suggest something which can be taken by management."*

Firm-level communication and dissemination of information were found to be different between Case 1 and Case 2. Participants 4 and 11 spoke of the informal structure in Case 2 and that they have *"a WhatsApp group for everyone who works here, I mean like everyone from the MD to the cleaner."* They have harnessed technological platforms. *"We have more WhatsApp groups that pertain to different areas, functionalities, to share information. We have different teams on Microsoft. If you want to quickly share something, you throw your contribution in."*

In Case 1, Participants 2, 7, and 9 spoke of very formalised structures that are hierarchical. *"Structured Works Council, where management and employees come together, they do share issues pertaining to the business freely."* Departmental meetings are run by various divisional heads either daily, weekly or monthly. *"They do 15-minute briefcase meetings, where they are saying this is what we are doing today, these are the reasons, these are our issues, and then those are written down, they are documented,"*. For other communications such as to do with the COVID-19 pandemic, Participant 6 said, *"then for things that come up suddenly they can just call the people into the canteen area, which is a larger area and talk to them."*

5.6.4.2 Managerial intuition versus technical decision-making

The idea of managers using intuition and gut feel to make decisions about how the firm takes advantage of opportunities emerging in the environment was shot down by participants. All participants did not regard intuition and gut feel like a decision criterion that supports the activities of the organisation. Participants responded by highlighting the need for technical knowledge-based decision-making. Participant 2 said no because *"our fertilisers are regulated…there are standards which you need to produce fertiliser."* While Participant 3 stated that "*this industry [pharmaceutical], is scientific…there is no gambling in science…either there is a correct answer or the next one is wrong."*

Participant 6 advanced the debate by stating that he prefers *"systems that are structural, leaning a little on the bookish side, tried and tested principles and guides."* According to this participant, this example was used to illustrate how gut feel can result in the wrong business decisions.

> *"…in developing product A, because I have seen it imported and there are 50 people who use this drug in the country, and you develop the formulations and pay USD100,000.00 for the intellectual property rights, how will the firm benefit from the money generated from 50 customers?"*

Participant 7 highlighted that product decisions *"need to be based on structured, and methodical decision making, where you are looking at the history, what has been happening and where you want to be"* as a business.

Participant 11 said there is no *"thumb sucking in the team."* Participant 8 supported the notion that *"most of the decision making is structured, and it's based on teamwork and analysis, which is also one of our core values."* Two participants felt that the past experiences of senior executives may be worth listening to. *"Current MD is…25 years in this one company, their gut feel is worth listening to"* and *"sometimes we use just that experience to make decisions."*

However, some sentiments supported the non-cognitive nature of managerial decision-making where there is no evidence in the initial sensing process of decision-making. *"There are times when you would use gut feel because the evidence does not point you in one direction,"* hinted Participant 5. This can also come into play when pursuing opportunities in a new segment and there is a lack of information as highlighted by Participants 2 and 6, *"…but when it comes to your new business development that's when it applies"* and *"maybe this is where there is lack of information"* about the new product. Participant 3 added that gut feel can be useful *"when it comes to, for example, the political environment…sometimes you just feel that in this country there are a lot of inconsistencies"* in policy prescription.

5.6.5 Summary of results pertaining to RQ3

The goal of the third research question was to ascertain how the collective adaptive actions of managers in firms informed their knowledge acquisition and thereby influence their decision-making. This was related to the dynamic capability of transforming with some linkages to sensing and seizing. The three emerging themes that allow for an understanding of how the adaptive actions of managers influenced managerial decisions were *transform: recombination assets and resources*, *transform: knowledge management* and *transform: information dissemination, see* Figure 9, above. These relate to how the firm's assets and resources can be combined to improve efficiencies and allow the firm to explore new ventures. The dominant theme was found to be knowledge management, with a grounding of 17, and how it is integrated in the learning orientation of managers. Participants believed that having knowledge management capabilities can help managers' effectiveness in coordinating organisational transformation through resource recombination and restructuring. Six sub-themes emerged under the theme of *asset and resource recombination* which were highlighted as, (1) managerial orientation to problem solve, (2) managerial cognition and co-specialisation, (3) managing asset renewal, (4) governance and risk management, (5) new product development and market segments and lastly (6) operations management. These capabilities are critical for firm renewal and management's ability to make long term strategic decisions. The ability of managers to achieve firm renewal was emphasised and was linked to the cognitive capabilities of managers to effectively communicate strategy to employees so as to encourage them to carry out activities that support firm renewal. The implications for practitioners for the transforming capabilities will be reviewed in Chapter 6.

5.7 Results: Research Question 4

How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to the firm's resilience over an extended period?

The organisational factors that affect how managers deploy dynamic capabilities are important to take into consideration when evaluating the foundations that impact the dynamic capabilities in an organisation. These foundations are found at multiple levels of analysis, that is, at the organisational, team, individual, or environmental levels. They either facilitate or hinder the development, deployment, or maintenance of dynamic capabilities. The schematic diagram below, Figure 10, shows the themes that emerged related to the firm factors that support development of dynamic capabilities. Internal orientation and culture had the most groundedness with 12 mentions from

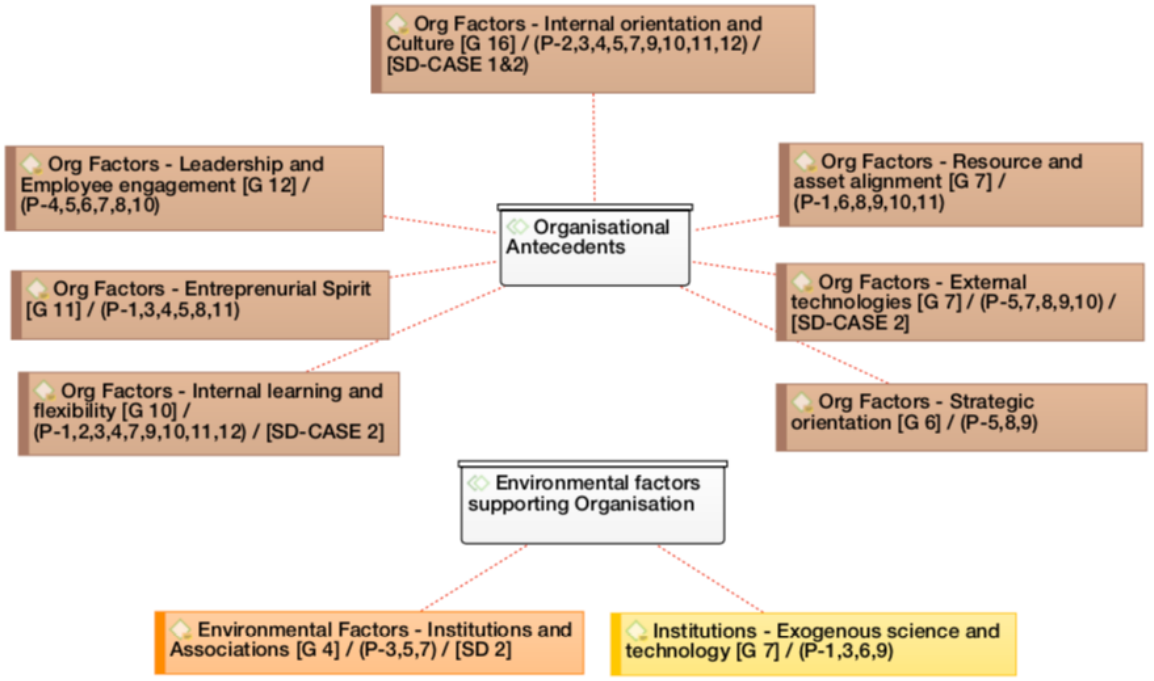


Figure 10: Schematic representation of the themes for organisational orientation

Note: G = Groundedness, P = Participant, SD = Strategic Document

Source: Author's own

5.7.1 Organisational factors supporting dynamic capabilities

In this section, the results in Table 14 are used to explore insights that may point to the heterogeneity of the firm and factors that converge to reflect firm homogeneity. We seek to explore what managers said regarding their engagement with employees and how they have contributed to firm resilience by enacting behaviours that demonstrate flexibility and adaptability to dynamic changes in the operating environment. The section ends with insights that were observed regarding the impact of environmental dynamism and the factors that support the firm's outcomes by deploying dynamic capabilities.

Table 14: Organisational factors supporting dynamic capabilities

Ranking	***Organisational factors supporting dynamic capabilities***	***Participant*s**	***Groundedness***
1	Internal orientation and culture	9	12
2	Leadership and employee engagement	6	11
3	Entrepreneurial spirit	6	9
4	Learning, adaptation and flexibility	9	8

Ranking	*Organisational factors supporting dynamic capabilities*	*Participant*s	*Groundedness*
5	Resource and asset alignment	6	7
6	Strategic orientation	5	6
7	External technologies	3	6

Source: Author's own

5.7.1.1 Internal orientation and culture

Internal orientation and culture determine how an organisation's structure influences open communication. Participant 3 highlighted that in Case 2 they have a structure where employees function well and in *"cross-departmental communication which follows a hierarchical"* chain of command. Although this may seem *"bureaucratic and time-consuming", the participant emphasised that "it creates order, it creates sanity in the business environment,"* and they stick to the current organisational structure.

Another different view from managers in Case 2 was that in terms of information dissemination, there was open and direct interaction with senior executives

"…has a level of informality that I like. Information is all over. You don't have to wait for an address in the staff canteen or a formal training program for you to know this is the way we are going to do things." (P4, P8 and P11, Case2)

In Case 1, Participant 7 pointed out that the firm had a short structure that allowed efficient communication between the lower levels and the executives. *"It enhances innovation, because of that close interaction between our executive and the rest of the organization."* Participant 10 highlighted that although this was a short hierarchical structure *"to a good extent you almost getting a situation where you say this is actually a bureaucratic structure and sometimes you then do not get information,"* Furthermore, "*information does not flow from the bottom up …our young people are very conversant with some of these technologies*."

5.7.1.2 Leadership and employee engagement

Leadership and employee communication are key to effectively engage and develop a culture of inclusion and inviting all personnel to identify opportunities in the environment that can be exploited by the firm.

Employee engagement was seen by Participant 5 as a critical part of the firm, because before COVID-19 hit, *"Once every quarter I would visit every operation, and I would talk to the group."* These engagements were used to discuss pertinent issues such as company performance.

"Then we would go on to talk about the changes in the environment, in the economy, what does it mean for the company, what are the areas that we should look at in terms of strategy?"

Participant 4 mentioned that strategic management decisions were also influenced by lower-level staff *"you know where strategic decisions are getting a nudge from the bottom of the organisational pyramid"* because during employee engagements a salesperson may mention, *"should we continue serving this market, because the past three weeks, we do not seem to be getting enough orders."* In support, Participant 6 highlighted that employees can motivate for procedures to be changed as long as *"the benefits of changing the procedure or the way something is done"* are articulated well and the change *"is reviewed by relevant people, including compliance, and is implemented."*

Participant 8 pointed out that in Case 2, employees *"get rewarded for new ideas in the form of commissions"* when they are bringing new opportunities to the business and help to mitigate threats.

5.7.1.3 Entrepreneurial spirit

The entrepreneurial orientation was seen as the firm's ability to create new products, enter new market segments, acquire new customers and start new ventures. Participant 4 considered entrepreneurship in the way they have been able to *"register a new anti-diabetic drug…getting the licencing rights, investing about EUR76,000 to conduct studies for the new drugs"* because they forecasted good revenues from this product and *"a payback period in the next two to three years."*

Participant 5 underscored that besides new products, strategies may warrant that the firm implements a new structure to capture new markets. *"We have set up a new business development team that is going out to try to develop new products."* The choices are made to also ensure that the firm defends its revenues as "we can even out our cash flows between the agricultural season peaks."

5.7.1.4 Learning, adaptation, and flexibility

The firm characteristics of learning, adaptability, and flexibility are associated with the acquisition of knowledge and relevant information through study and training. The firm's ability to learn fosters the firm's adaptability, changeability, and flexibility through the individuals working together as a team. *"…I guess one of the things that the organisation has done very well is to invest in training,"* Participant 10 believes that they have done well in training people in the company, though it may be at a cost. The benefits outweigh the cost because Participant 7 highlighted that *"thinking outside the box and trying to look at things differently"* is critical for

implementing change, and also, *"a problem is sometimes not really a problem, but an opportunity to improve"* and encourage organisational flexibility.

When it came to the organisation responding and adapting to policy pronouncements, Participant 7 advised that in their organisation senior executives *"meet and discuss the way forward in terms of adapting to changes in the policies that govern"* their operations which ensured that the organisation was compliant with any legislation that came through. Participant 4 added that agility is one of the key ingredients for success. *"We are an agile company, we don't hesitate to change, to ensure that we remain on course to achieve our objectives."*

5.7.1.5 Resource and asset alignment

A firm develops internal competencies for continuous realignment and reorganisation of its resource base and human capital. Participant 6 mentioned that internal training ensured employees were prepared for change. *"We train people and reallocate them to certain areas where they have strengths. There is also a process of appraisal to ensure continuous learning after which appropriate reviews are carried out so that they remain dynamic."* Participant 8 added that the length of years contributed to the capabilities that ensured employee function alignment. *"I would say some of our R&D people have been here for more than 10 years, and they know their work."*

However, Participant 9 demonstrated that human resource alignment can be costly, and they had to reduce headcount when the market contracted. *"We stopped recruiting, we just recruited in the critical positions."* And to ensure resource alignment the firm started *"doing training for those key people...to run that one plant"* and when they needed to expand, they *"would bring in contract labour to fill in the gaps."* This process of realigning kept them in business because "the environment did not support a large overhead with this small revenue volume."

Participant 11 highlighted that they had to be flexible and adaptive in the face of COVID-19. They reallocated resources to meet environmental and business demands *"as far as working capital requirements were concerned in terms of reallocation of resources to the chronic medications."* They had to remove resources from the manufacturing of *"flu remedies, for example, due to the wearing of masks, the number of flu cases went down."*

5.7.1.6 Strategic orientation

The strategic orientation looks at the resource-based view of a firm's strategic choices which managers of the firm pursue to create value. These are either differentiated, focused, or low-cost strategies. Participant 5 emphasised that for Case 1 to survive they need a low-cost

manufacturer. *"There was a realisation that we need to be very cost-effective and so we have moved from some of the old products to new products, which are high analysis fertilisers."* This *"has entailed bringing in new equipment"* to strengthen the resource base as highlighted by both Participants 5 and 9.

In Case 2 Participant 8 said, *"one of the key success factors for a generic manufacturer, we need to be cost competitiveness."* The participant explained that there is constant realigning of old product pricing and checking of new product pricing against competition because of the requirements to be profitable and viable. *"What we do is we check the prices of other competitors, then we check against our product, we look at the margins, that we can get, if the margin is not acceptable, we see if we can improve our margin."*

5.7.1.7 External technologies and advancements

How managers of a firm interact with emergent technology will determine whether they acquire and adapt quickly or they find the firm being overtaken by technological advancements.

Participants 5 and 7 consider technological advancement to be *"at the heart of their survival."* This was also highted in the strategic document for Case 1 (Case 1, 2021). In their industry *"business is changing rapidly, with new regulations…changes in how you operate new technologies, and the bringing in of new improved ICT"* require investment and partnerships so to capture the right technological know-how. Participant 5 noted that *"sometimes it's not necessary to have a partner as such because some of the knowledge is now freely available on the internet."* Participant 7 added that *"the issue of putting in world-class management systems ensures we meet ISO Standards."* These were developed to ensure that companies meet technological competencies and regulatory requirements to achieve product quality and maintain its customer base.

Participant 8 mentioned that in the pharmaceutical industry they use diffused technological advancements, and they repurpose to meet their product development needs. "*What this means is we copy medicines that are on the market…so, most of the technology is diffuse… we use existing technologies."*

5.7.2 Environmental factors that support dynamic capabilities

The following section draws on Table 15, to explore the environmental factors which were observed to have a role in how dynamic capabilities could enhance a firms' technological advancements when it takes the time to improve its internal adoption.

Table 15: Environmental factors that support the deployment of dynamic capabilities

Ranking	*Environmental factors that support dynamic capabilities*	*Participants*	*Groundedness*
1	Institutions, exogenous science and technology	3	7
2	External Institutions and Associations	4	4

Source: Author's own

5.7.2.1 Institutions that influence exogenous science and technology

External institutions were viewed as an essential means of helping the firms to create value or through tapping into their research and development and advances in scientific know-how. These are the developments in exogenous science and technology that enable the firm to deploy dynamic capabilities of capturing value through the adoption of the new technologies in the firm's industry. Participant 1 highlighted how regulatory changes require Case 2 to acquire new technologies "*to be able to remain in business and then procure the necessary technologies and identify the main areas for the assets"* required. This asset acquisition can come with the need to recruit *"new people to operate them with the right qualifications."* Participants 8 and 1 added that acquiring these new technologies is expensive and not easy because they ought to buy cautiously to integrate them with existing technologies.

With regards to maintaining high technological standards, Participant 9 said they have had to keep up with international standards because they *"have maintained ISO Standards since 2006"* hence *"are ISO certified for environmental safety and quality assurance, and also occupational health and safety."* Participant 10 discussed how it was important for them to maintain these standards for their products to remain competitive. *"Standards have also given us that strategic advantage over the competition."*

The participants in Case 2 highlighted how their strategies are influenced by the developments in science and technology that impact how they choose products to develop and which drugs they register. The WHO's stringent protocols were one issue raised that was highlighted to have hindered growth and profitability. *"WHO is the one that determines which drugs are in use and they kept changing the regiments every three to five years, and we felt, no, this is not the kind of business that makes sense to us."*

The same was observed for organisational structures where WHO and other regulatory bodies dictate the organisational structure Case 2 should have. According to Participant 6, *"the Head of Manufacturing and the Head of Quality Control should not report to the same person...you find that when WHO and other regulatory bodies audit, they check for these boundaries."*

5.7.2.2 External Institutions and associations

Interactions with external associations when analysed at the firm level, have been seen as drivers and sources of dynamic capabilities in dynamic environments. Associations with international institutions can help the firm develop dynamic capabilities in unstable macroeconomic environments.

Participant 3 highlighted the importance of external partners who advise them on new plant designs and software technologies.

> *"We subscribe all our senior technical people to the International Society for Pharmaceutical Engineering (ISPE), so they can provide us with information on plant design. In the pharmaceutical industry…drugs that are manufactured in old plants are not accepted in the world, so it is important that the engineers advise us…"(P3, Case2)*

Participant 7 also feels that associations give a firm the support to be able to follow international trends. *"We are part of a lot of associations that are involved in the industry globally."* The participant commented that associations like Fertilizer Manufacturers Association of Southern Africa and CropLife Middle East and Southern Africa also act as consultants. *"We would even invite some of these consultants to visit our site, go through it, and then they give us recommendations on where we should be."*

Participant 5 highlighted the approach they have taken with regulators in formulating strategy by being involved with *"policy formulation and seeing the direction agriculture is going and the new emerging structures."* According to Participant 5, this has shaped their firm's "*long-term view"* and what they think will happen. *"…and we try to tailor our strategies and even change our structures towards meeting what we think will be effective in the future."*

5.7.3 Environmental factors that impact Firm dynamic capabilities

Drawing on the results in Figure 11 and Table 16 the following two sections will give insights into how environmental factors were observed to have more influence on how dynamic capabilities can enhance firm consequences in terms of growth, sustainability, or survival compared to organisational factors which were observed not to have a great influence on how dynamic capabilities impact firm results.

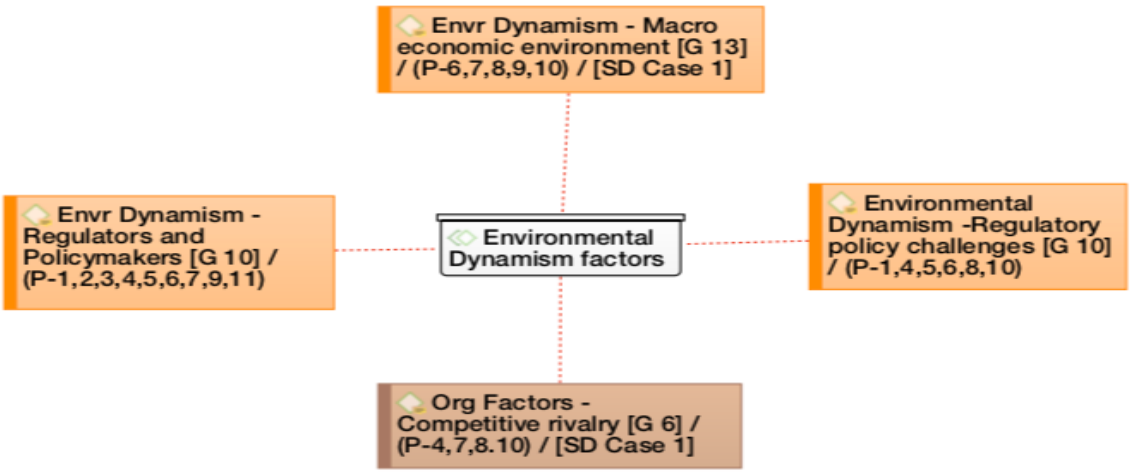


Figure 11: Schematic diagram of environmental dynamism

Note: G = Groundedness, P = Participant, SD = Strategic Document

Source: Author's own

Table 16: Environmental factors impacting outcomes of dynamic capabilities

Ranking	*Environmental factors impacting outcomes of dynamic capabilities*	*Participants*	*Groundedness*
1	Macroeconomic environment	6	13
2	Regulators, policymakers and lobbying	9	7
3	Regulatory policy challenges	6	5
4	Competitive advantage	4	5

5.7.3.1 Macroeconomic environment

The Zimbabwe macroeconomic environment presents challenges that manufacturing companies must navigate. Participant 1 cited Government actions when responding to societal challenges at a national level, negatively impacting strategy. *"Government was now getting 90% of the products from donations"* negatively impacted the business model. The management decision made was to *"dump the communicable disease business".* The participant continued to highlight that the Government changed their stance, and this happened with the current Covid19 pandemic, *"for now this has changed due to the Covid19 pandemic, Government has realised…they cannot ignore local drug manufacturers".*

In Zimbabwe, authorities abruptly changed the fiscal and monetary policies as the Government issued Statutory Instrument 127/21 to curb the foreign currency black market. The Statutory Instrument disrupted the way corporate entities in Zimbabwe price their products, as highlighted by Participant 11. So, *"when the SI was issued, where Government*

insisted that there should be no, US dollar pricing...we just ensured we understood the pronouncement… we insisted on increasing the Zimbabwe dollar prices on our sales because that is what made sense to us."

Participant 4 highlighted the need for rapidly responding when responding to Government pronouncements. *"There are government pronouncements that interfere with your decisions"* hence, "managers in manufacturing firms have to be aware of these challenges. Participant 6 emphasised that a company has to be dynamic; *"in this environment we change accordingly, if we do not change, we are stuck with projects that will not give a return and you sink."* Finally, Participant 8 stated, *"There are several flags that come from the macroeconomic environment, information about Government importing in bulk"* to run specific government projects. These signals on anticipated Government spending can inform managers in the manufacturing industry what aggregate demand for their products will be.

Participant 9 shared how Government policy can change a whole industry which impacts aggregate demand for goods and services, *"like when the land reform happened, in a short space of time the market moved from being a big agricultural market to being a small market."* Although the turn down in the economy following the land reform programme resulted in foreign currency shortages, "we also suffered foreign currency shortages, given that we import most of our raw materials," which has led to supply constraints that the firms need to navigate.

The strategy document for Case 1 comprehensive plans of mitigating risks associated with the *"currency position and policies"* and how *"the Zimbabwe economy over the past five years has been highly turbulent, characterised by exchange rate instability, and with the advent of Covid19 uncertainty and complexity had been amplified"*. Specific disruptions have also resulted in unemployment over the years. Therefore, participant 1 inferred that the policy pronouncements *"have been causing unemployment…which interestingly enough is a factor Government tries to respond to"*, meaning that policies should support firms so they can create employment, which increases incomes and aggregate spending overall

5.7.3.2 Regulators, policymakers, and lobbying

These are regulatory relationships that managers must manage because they have the potential to either strengthen, weaken or negate the impact of dynamic capabilities on firm performance.

Participant 1 in Case 2 highlighted the challenges of trying to attain their first license to manufacture medications for communicable diseases. *"We were not supported by anyone in the world, because of sanctions." What made the situation even more challenging was that they "met another dynamic, the products were still on patent."* This led to Case 2 lobbying

through the government “to evoke a section of the World Trade Organisation (WTO) provisions for emergency response” and enable them to gain the correct licensing.

Participants 1 and 4 added that to gain international recognition for Case 2 to be able to export they had to also lobby through the Ministry of Health to attain *“WHO’s pre-qualification certification for high standards for quality”* and they *“managed to attain the certification”* which opened doors to start exporting to countries such as “Belarus, South Africa, Botswana, and Thailand.” Participant 6 added that WHO certification gives the market the assurance that you “manufacture and distribute quality products” according to the guidelines.

However, this initial success was observed to develop into a strategic hindrance because as formulations for communicable diseases started evolving, WHO was imposing guideline updates every two to three years. Participant 4 highlighted that the strategy became unsustainable. *“We realised we are exporting quite a lot, but this is not where the money is because the demands in the communicable diseases segment were quickly changing.”* Participant 1 added, *“That is why we dumped that line of business.”*

On the local front, Participant 7 highlighted that there is a fair amount of lobbying that Case 1 has had to embark on to receive support from government tenders in agriculture so that they *“are given to local companies,”* because external players were bringing in imports at cheaper prices and taking everything. *“So, we have tried to ensure that we get protection from the legislators.”* Participant 10 also looked at how development in new products may be hampered by legislation, which is why the industry formed “an association of Fertilizer Manufacturers of Zimbabwe, a body that is very critical to businesses and our organization as a fertiliser manufacturer, they also lobby and raise awareness with the government” to create an enabling environment for the industry to grow.

5.7.3.3 Regulatory policy challenges

Regulatory policy changes are factors participants perceived to impact the firm’s deployed dynamic capabilities. The regulatory policy pronouncements can influence the firm’s capacity to exploit opportunities and threats and enact strategic initiatives.

Factors on policy changes and legislation during COVID-19 negatively impacted Case 1. However, Participant 7 shared that, *“A company like Case 1 is always a focal point of attention, we can't afford to break any laws or any statute that comes up.”* So, to continue producing during the lockdown and sustain the business they “*applied to the government to reopen and justified why”* they were a critical player in the country. *“Senior management must have made some consultations to discuss the way forward in terms of adapting to changes in the policies that govern our operations.”*

On the other hand, Participant 1 talked about government policy and the provisioning of drugs for communicable diseases. Case 2 was now under pressure to go back to manufacturing the loss-making products because, *"The Ministry of Health phoned, asking us to go back to these drugs, but there is no business in that segment."* There is competition with Not-for-Profit Organisations (NPOs) that operate in that space because the *"government was now getting 90% of the products from donations,"* highlighted Participant 1.

Participants discussed the environmental changes that occur and require a firm to dynamically change its strategies and the role of dynamism on firm performance. Participant 10 pointed out that Case 2 must always meet the regulatory requirements of *"all the standard bodies"* that they interact with to maintain plant compliance with all relevant authorities in the local and target export markets. The strategy document for Case 2 highlighted the need for the organisation to continuously upgrade their systems in line with international standards and "to retrain relevant personnel in all the identified areas in current general manufacturing practices and to continuously adhere to the *"target WHO certifications" for all the new products they develop. Case 2's strategy also documented that these initiatives also require "upgrading the Quality Management Systems (QMS) to meet all regulatory requirements."*

5.7.3.4 Competitive Rivalry

The industry factor of competitive rivalry was viewed by participants as having effects that could strengthen or weaken a firm's strategies.

Case 1 Participant 8 highlighted that there are big challenges when the government floats tenders to supply the product at a cheaper price to the public. *"There are many flags that can come out of the macroeconomic environment, government policy as well as the government importing in bulk, and they promise to sell the product to the public as well."* Participant 7 added that importers were a big challenge for the business, however, Case 1 was committed to maintaining competitive advantage because of the heavy investment in the two granulation plants. *"We mitigate the risk by putting more emphasis on permanent structures, like maintaining our plants which we know they cannot easily set up."*

Of note was Participant 1 in Case 2 who considers government tenders to not yield many benefits in supporting the firm's strategy. "Unfortunately, the government has not been buying, they get donations. The donors do not want to buy from locals, they want to bring products from outside. However, due to COVID-19 logistical dynamics, there have been changes, and the challenges made them aware that you cannot rely on outside suppliers." They need local manufacturers as well.

5.7.4 Summary of results pertaining to RQ4

The goal of the fourth research question was to understand how dynamic capabilities are contributing to firm resilience in the country's unstable macroeconomic environment. Given the protracted nature of the unfavourable macroeconomic context resilience is closely linked to sustainability. Figure 10, above, summarises results for the fourth research question, which looked at the firm factors that support the deployment of dynamic capabilities. The two themes that emerged included *organisational antecedents* and the dynamic capabilities that allowed the firm to cope with these antecedent firm factors. Seven sub-themes emerged and these were related to the firm's *internal orientation and culture* and how the managers interact with employees to encourage employees to respond to complex situations in an adaptable and flexible manner.

5.8 Conclusions

In conclusion, Chapter 5 presented the results from the 12 interviews conducted to explore how managers have developed and deployed dynamic capabilities which have influenced firm resilience for manufacturing firms in an unstable macroeconomic environment. Findings revealed managers employ various environmental scanning techniques to sense new trends and patterns for opportunities and threats. In addition, they engage in scanning the internal organisational environment to determine the firm's competencies and the external environment for determining opportunities against industry competitiveness.

The second dimension explored was that of seizing, which answers the second research question. Findings revealed that managers have to possess both cognitive and non-cognitive capabilities in response to the emerging opportunities and threats that allow the firm to capture and exploit new opportunities. Participants highlighted the importance of resource allocation and asset renewal when exploiting new product developments, developing new market segments, and exploiting exogenous science and technologies.

Participants in the case study gave insights into the seizing capabilities of managers as key for asset and resource recombination. The ability for managers to seize opportunities enables their knowledge management capabilities and the firm's learning orientation, which strengthens the firm's ability to be flexible and adaptive to change. In addition, managers' ability to disseminate information encouraged employee responsiveness and adaptability to changes in the operating environment. Finally, the fourth research question looked at how the firms have built resilience over time by evaluating the internal and external factors that have supported the deployment of dynamic capabilities. Further, the internal and external factors

either strengthen or weaken the relationship between dynamic capabilities and firm outcomes in an unstable macroeconomic environment.

In evaluating the findings, the following observations were made. First, the two case firms operate in highly regulated science-based industries. Case 1 is a manufacturer of fertilisers and agrochemicals, and Case 2 is a generic drug manufacturer. The strategies they implement are impacted by emerging trends and discoveries in external sciences and technologies. Second, the researcher found the management styles of the two cases to have different characteristics. Case 1 is hierarchical and formal with a bureaucratic cultural orientation. Case 2, in contrast, is flat structured and has an entrepreneurial cultural orientation. Third, differences were also observed in the way managers execute strategies in Case1, where executives evaluate and make decisions on courses of action delegated to various divisional heads for tactical execution. In Case 2, although it has a functional organisational design, decisions are made in multi-disciplinary teams drawn from all the different divisions in the firm. Finally, both firms' strategic orientation and strategic fit were to follow a low-cost strategy instead of a differentiated or niche market strategy. A critical analysis of the findings will be carried out in Chapter 6 through the lens of the review literature for this project to understand the above observations better.

Chapter 6: Discussion of Results

6.1 Introduction

This chapter presents a discussion of the data collected through semi-structured interviews that were conducted to investigate the lived experiences of managers who were operating in an unstable macroeconomic environment in a manufacturing setting. The analysis will follow the themes and insights that were presented in Chapter 5. These results looked at the capabilities that influence managers to sense by scanning and filtering the environment for opportunities and threats, then seizing the opportunities by capturing and transforming the firm's resource base. The research seeks to contribute to the dynamic capabilities literature and advance knowledge on how dynamic capabilities influence organisational resilience in unstable macroeconomic environments

6.2 Discussion: Research question 1

RQ1: *How do managers in manufacturing firms identify opportunities in the macroeconomic environment that inform decision-making and give rise to firm performance?*

The research question sought to determine how firms in the manufacturing sector identify emerging trends and opportunities and the decision processes that lead managers to capture opportunities and mitigate risk (Teece, 2007). Sensing is a critical dimension for identifying new markets, new customer segments, new products and making decisions to enter new ventures in the dynamic capabilities' framework. In addition, the firm's sensing capability can identify the opportunities that emerge in the operating environment (Fainshmidt et al., 2016).

6.2.1 Identifying new target markets

The dominant theme that emerged was management's ability to scan and identify new trends, opportunities, and patterns emerging in the environment so as to explore with the aim of seizing the best and profitable opportunities. This was done through organisational processes that looked at the available data and prevalent conditions that the firm could recognise before competition or new entrants recognised them (Helfat & Peteraf, 2015). The identified themes have been analysed in two categories: environmental and industry scanning techniques, which were supported by 12 quotations from five participants from Case 1 and three participants from Case 2. Furthermore, there were internal competency scanning processes, which were mentioned by three participants in Case 1 and two participants in Case 2. The scanning capabilities will be discussed to understand how managers have sensed opportunities in the operating environment.

6.2.1.1 Environmental scanning and internal appraisal

Two essential aspects for managers in the case firms that were studied were their ability to coordinate their management and marketing teams to carry out environmental scanning processes to identify new trends and emerging patterns that were external to the firm through membership in industry associations and professional bodies. They also carried out internal scanning to assess the internal competencies of the firm. The sensing capabilities were deployed through scanning techniques which Case 1 and Case 2 managers employed through internal scanning routines. These looked at the assets and resources available to organisations for seizing opportunities. As a result, the organisations were able to "create, modify, extend or upgrade" their portfolio by constantly assessing their capabilities (Lee et al., 2021). This learning ability gives managers the power to shape new opportunities that can be explored for future exploitation (Teece, 2007). There was a convergence of competencies for scanning techniques and the use of tools such as PESTLE, SWOT Analysis, and industry analysis using Porter's Five Forces model (Teece, 2018a; Winter, 2003).

However, these tools in themselves are ordinary capabilities. What stood out from the data for Case 2 was the dynamic way of gathering market and customer information using mobile devices, which are used to send information back to the firm in real-time. Case 1, on the other hand, spoke of marketing teams returning from meeting with farmers to discuss opportunities in weekly departmental meetings and monthly management meetings. The difference in execution was highlighted by differences in organisational cultures. Case 1 was found to have a hierarchical structure and reporting lines, while Case 2 had a flat structure that gave managers decision-making powers. The data shows that managers in Case 2 have access to information in real time, which strengthens decision capabilities.

6.2.1.2 Tapping into technological developments

Tapping into developments in science and technology recognises that the business environments in which firms operate are dynamic and there is accelerated growth and discovery in science and technology (Teece, 2020). These dynamic capabilities present opportunities and threats for the firm to capture. One body of literature states that incumbents in an industry would require an entrepreneurial orientation to constantly update their technological toolkits and advance firm renewal through sense-making (Helfat & Peteraf, 2015).

This means that firms require cognitive abilities that develop a deep understanding and sensing of new developments in science and the intangible and tangible technologies that drive innovation in the manufacturing sector (Helfat & Peteraf, 2015). Therefore, how firms develop dynamic capabilities depends on the cognitive abilities of managers to discern

internal, historical, and industry factors that influence the way they identify which technologies to capture.

Case 1, demonstrated the sensing capability by tapping into science and technology that led to changing their traditional business model of manufacturing fertilisers for grain crops such as maize and wheat. They have combined business sensing with concerns about environmental issues and terrorism. Case 1 has further advanced the manufacture of compound fertilisers by tapping into the scientific and technical know-how of producing highly specialised fertilisers. Case 2 demonstrated the dynamic capabilities of tapping into science and technology by tapping into scientific know-how in chemistry and acquired new competencies in an emerging market for generic drugs. They were able to sense high demand in the market and redesigned their business model by recombining the chemistry skills acquired in personal care products and developed competencies that led to generic drug manufacturing. This ability to exploit science and technology dynamically and change the business model is recognised as an entrepreneurial orientation that enhances firm renewal and higher-order capability Girod & Whittington (2017).

6.2.1.3 Tapping into complementary products and new ventures

When firms scan the environment, attractive opportunities should not be bound to the organisation's industry. Tapping into complementarities is one way of exploiting opportunities that managers identify in other industries. The tapping of internal complementarities involves assets and resources that strengthen the firm's ability to sense and seize opportunities. The literature on dynamic capabilities found that the relationship between dynamic capabilities and complementarities has positive outcomes (Fainshmidt et al., 2019). Participants identified this capability as a way to increase the firm's product offering by increasing and renewing the organisation's resource base and opening up access to other markets.

However, the two firms took different routes to take advantage of complementarities. Case 1 has a processing plant for agrochemicals which are produced for specific customer segments and exported to Botswana. They expressed the prospects of venturing into blueberry production, a venture identified for its potential to earn foreign currency for the firm. Case 2, on the other hand, has some products that are manufactured by partners in Asia and Zimbabwe. They were able to identify opportunities to provide pregnancy test stripes, HIV test kits, latex gloves manufactured in Asia, and condoms manufactured by a local partner. All these products are branded with their name and are sold in local and regional markets. Deploying dynamic capabilities for sensing complementary products and services gives Case 1 and Case 2 the ability to make continuous changes to the resource base and increase firm sustained performance over time (Fainshmidt et al., 2019).

What emerged as ordinary capabilities or zero-order capabilities were sub-themes for benchmarking processes and sales and marketing activities. These activities are what managers in Cases 1 and Case 2 do to maintain their current business position and do not create a competitive advantage Winter (2003).

6.2.2 Decision processes for capturing profitable ventures

The second theme that was dominant in the study was the decision-making criteria for seizing profitable opportunities and new ventures. Decision-making processes were a sub-theme identified as the building block for developing higher-order dynamic capabilities for sense-making. Managers had capabilities to direct strategic initiatives and how the decision criteria to stop the search gave cues to employees when knowledge accumulation was now enough to make the right decisions (Schilke et al., 2018). Consequently, Case 1 and Case 2 have developed capabilities that enhance the sense-making dimension that empower decision making when identifying new opportunities. Sense-making is a manager's cognitive capacity to direct strategic initiatives and decision-making processes through intuition and gut feel that point to the non-cognitive processes and heuristics of managers (Manfield & Newey, 2019). These two enactments of sense-making processes converge to support the decision capabilities of managers in distinguishing profitable ventures (Helfat & Peteraf, 2015).

6.2.2.1 Managerial cognition and capacity

The cognitive capabilities of managers' perceptions and the attention they pay to the information they gather during the sensing phase allow them to recognise patterns and interpret the data that they have collected to make sense of the environment and the changes that affect products, markets, and customers. Managers in Case 1 used sense-making capabilities during interactions with international associations such as the Fertilizer Association of Southern Africa (FERTASA) and CropLife Africa Middle East to sense the future direction and advances in fertiliser and agrochemical technologies. The managers advised that this is the way they keep abreast of new trends and molecule formulations and avoid the risk of continuing with unprofitable old product ranges. It also stops or mitigates the risk of rent dissipation (Teece, 2007).

Managers in Case 2 shared that for a while, the organisation made money from making a class of drugs associated with communicable diseases. However, when the government started to acquire cheaper drugs from external partners, they were able to make timely decisions to change the business model to pain management drugs and acquired the relevant intellectual properties and technologies to capture this new business market which they perceive is growing due to poor lifestyle choices that lead to poor health.

In assessing the capabilities of managers, we identified two dynamic capabilities as being embedded in these management teams. In Case 1, their deployment of dynamic capabilities is driven by learning and employing interpretive cognitive skills to successfully understand end-user needs for their products. Therefore, they have invested in technologies to capture customers with special fertilisers for macadamia, banana, and vegetable growers. This capability was corroborated by Pandza & Thorpe (2009). In Case 2, they were able to deploy higher-order dynamic capabilities, as postulated by Teece (2018a), by sensing the need to reshape the business model, acquiring new intellectual property, and expanding into a new market segment.

6.2.2.2 Decision-making processes of intuition and gut feel

Decision-making processes can be impacted by management's reliance on past experiences, which opens up the organisation to decision-making errors and an over-reliance on experience (Helfat & Peteraf, 2015). Management heuristics can aid decision-making as discussed by Manfield and Newey (2019), yet heuristics associated with intuitive decision-making can put a firm in a position of rigidity due to the dominant logic of powerful executives (Pandza & Thorpe, 2009). The participants in Case 1 and Case 2 highlighted that much of the decision making was based on scientific and technical analysis and less on intuition and gut feeling. Managers in both cases acknowledged that intuition and gut feel have no place in science-based decisions and that is because decision errors will have huge ramifications as they impact human life. This view was supported by Conboy, Mikalef, Dennehy, and Krogstie (2020), who emphasises the need for business analytical systems to be structured and evidence-based. Participants went on to recognise that one can rely on heuristics of intuition to sense the environment for new information when no information describes a perceived phenomenon.

6.2.2.3 Profitable products and new ventures

Teece (2020) emphasises that deciding which opportunity is profitable is a difficult process for managers. However, this process can be enhanced by the appropriate level of sensing and knowledge accumulation (Pandza & Thorpe, 2009). Knowledge accumulation creates the capacity for the firm to evaluate the profitability of new products, calibrating the opportunities, and the acceptability of the product in the market (Teece, 2020). The most recurring theme in sensing for profitable products was how each new product, proposed venture, or project was evaluated as a project and had to be justified through an internal process of project appraisal. The managers in Cases 1 and 2 explained how most new product initiatives start by developing the first business case and evaluating the profitability of the new initiative or venture by delineating every aspect of the new product, including cost implications. Both Case

1 and Case 2 stressed the need to keep costs low because of the context in which they work, where customers do not have disposable income to purchase expensive products. This emphasis on keeping costs low pointed to the low-cost strategic orientation of both organisations, which has been identified as suitable for firms operating in resource-constrained environments as corroborated by (Fainshmidt et al., 2019).

6.2.2.4 Directing internal R&D and new technologies

Firms that have the ability to tap into internal R&D and new technologies are more likely to develop higher-order capabilities through open innovation (Teece, 2020). The companies interviewed did not talk about open innovation to develop dynamic capabilities in science and R&D. These levels of dynamic capabilities are expensive to deploy and maintain, therefore, in the developing world, tapping into exogenous sciences from external parties gives firms the leverage to enhance their internal R&D and innovative capabilities (Fainshmidt et al., 2019). Managers in the case organisation have developed routines and processes for directing internal R&D and new technologies, which have helped them successfully sense the right technologies to explore. It is also fitting that R&D is pre-dominantly enacted in the sense-making part of developing new opportunities.

Case 1 facilitates sense-making by acquiring scientific know-how in fertiliser advancements from organisations such as FERTASA and CropLife. They also highlighted access to diffused technologies which is facilitated through the use of internet creative research. Case 2 facilitates the sensing processes by engaging the World Health Organisation (WHO) and the Food and Drug Organisation of America to tap into emerging trends in R&D frameworks that have already been tried and tested that generic drug manufacturers can explore and exploit. Literature from first-world countries has investigated the capabilities of large R&D teams and shows how actors generate new scientific know-how that influences the interplay and competition between strategic business units (Lee et al., 2021). In the two Case Firms, this interplay and competition were not observed because the Firms are smaller entities with one dominant line of business, which means that everyone is collaborating in driving the identification of profitable ventures.

Other minor themes that the participants identified were the ability to establish analytical systems that are designed to aid learning and the development of the ability to filter, shape, and calibrate strategies. Managers in both Case 1 and 2 carry out the processes to filter, shape, and calibrate strategies because the resources available for developing new products are limited, therefore, the analytical systems aid managers to make the right choices and the right level of investment. The product testing in Case 1 involves customer involvement in

determining the boundaries of the new product enhancements that give farmers specialised high-analysis fertilisers.

6.2.3 Sensing threats and decision errors

The key dimension of the sensing capability has already been defined as the process of identifying, shaping and calibrating emerging trends in the operating environment and the internal environment of the company. Threats are factors that manifest and have the potential to impact the firm and its resources negatively (Teece, 2018b). The decisive way managers deal with threats is to craft strategies that predict, sense threats, and define resolution approaches to address them promptly. What makes a great strategy is when these processes can be observed by the competition but be non-imitable.

The participants identified four main threats as the constant factors they manage in their industries. The threat of the operating landscape changing in a way that disrupts current wholw industries and current strategies. Case 1 cited the infamous Zimbabwe land acquisition that forever changed the face of agriculture in the country. The observations made on Case 1 dealing with changes in the operating environment are similar to the challenges faced by NCR USA in the early 2000s, where the dynamism in the mainframe computing industry disrupted the profitable business model that had previously existed. (Helfat & Peteraf, 2015). Second, Case 1 restores and rebuilds the resource sufficiency and strategic cohesion of the firm while creating new configurations and routines to avoid firm collapse Manfield & Newey (2019) .

Participants 8 and 4 in Case 2 reported that the international landscape of generic drug manufacturers became so highly dynamic and fiercely competitive that they could not compete with Asian countries such as India, Singapore, and South Korea in price. Case 2's alliancing strategies renewed the firm's commitment as a generic drug manufacturer, to reconfigure its internal processes, and to change to acquire new drug licenses. Empirical upholds that networking and alliancing collaboration contribute to the sensing capability of new opportunities and recombination of assets (Giudici et al., 2018).

Lastly, participants cited that the government presents legislation and laws that can threaten the viability of the firm, a phenomenon that was recognised by (Teece, 2007). However, in contrast (Manfield & Newey, 2019) highlighted that developing ties with governments and legislative bodies can assist in deploying dynamic capabilities.

The results discussed presented two contextual situations. The responses to threats that the organisations perceive, and watch reflect different capabilities between managers in Case 1 and managers in Case 2. Case 1 management capabilities were rooted in their traditional firm orientation and the ability to lobby for government to support and participate in industry bodies

such as the Confederation of Zimbabwe Industries to influence policy and regulations. Government lobbying initiatives were not found in the dynamic capabilities literature of advanced countries. However, calls have been made to suggest that these initiatives are imperative for firms operating in developing markets. In that markets are not as developed and efficient as advanced economies do not large corporations to request assistance from government in times of distress (Barnard et al., 2017). It is proposed that building strong ties with government can be a way of deploying dynamic capabilities (Fainshmidt et al., 2016).

The entrepreneurial way in which managers respond to threats in Case 2 is widely supported in the literature as higher-order dynamic capabilities that help the firm continue to supply a mature market without the huge investment in R&D and resources as they tap into the resources of the firm that possess scope and scale (Teece, 2020). On the contrary, a study of 244 Taiwanese technology firms showed a weak association between dynamic capabilities and entrepreneurial orientation (Bitencourt et al., 2020). The difference in these results points to the different context settings, the difference in industry settings, and the economic age of evolution in which the firm is situated, as advised by Fainshmidt et al. (2016).

6.3 Conclusions to research question 1

The first, Case 1 and Case 2 had dynamic capabilities in sense-making when tapping into external science and technologies for new product developments. They also showed the ability to exploit complementarities that supported product innovation and entered new market segments (Schilke et al., 2018). The two cases also converged on cognitive managerial decision making, a core competency that the participants said was valued above academic qualifications.

The second insight relates to implications for theory when comparing Cases 1 and 2, is the theory of evolutionary fitness of the firm, the stage of economic evolution the firm is operating in, and how this influences firm performance and the deployment of dynamic capabilities (Teece, 2018b). The theory of evolutionary fitness is how firms proceed with business transactions, manage operations in volatile markets, and maintain the competence to evolve by creating, modifying, and renewing the firm's asset base.

Therefore, we can conclude that opportunities and threats are identified through various techniques, as demonstrated by the analysis of question 1. Prominently, managers' experiences in these two organisations were grounded in tapping into external science and technologies and managers' ability to make intelligent decisions.

6.4 Discussion: Research question 2

RQ2: *What decision criteria inform the restructuring of the organisation's resources to achieve strategic business objectives?*

6.4.1 Introduction

The ability of entrepreneurial managers to transform the resources and assets of the organisation is critical to strategic success (Teece, 2014; Zeng et al., 2017). Data collected from participants in two Case Firms will be evaluated to uncover how managers use their cognitive abilities to capture and seize opportunities (Helfat & Peteraf, 2015) by combining old and new knowledge to inform decisions on firm restructuring, asset recombination, and reconfiguration (Girod & Whittington, 2017). Three main themes that emerged during the interviews were decision making about resource allocations, flexibility and adaptation to change, and strategic partnerships and alliances.

6.4.2 Decisions on resource allocations

Knowledge acquisition is an essential component of the management toolkit and improves the nature of learning of the organisation to use old and new knowledge in the development of new products and new ventures to capture and capitalise on the creation of a competitive advantage (Bitencourt et al., 2020). Knowledge to create new products and novel creative technologies is the mainstay of businesses that want to survive in any dynamic environment (Teece, 2018b). Furthermore, the knowledge to integrate know-how and the ability of managers to engage in knowledge acquisition, accumulation, and sharing strategies inform better asset combinations, is path-dependent, and drives firm renewal (Pandza & Thorpe, 2009; Teece, 2020). Literature attests that firms who have core competencies that they need to execute their day-to-day duties in a given field cannot be said to have attained higher-order capabilities (Lee et al., 2021). However, for firms to demonstrate higher-order capabilities, they need to demonstrate how their knowledge has been recombined or co-specialised to create new and novel products that can be monetised (Teece, 2020).

6.4.2.1 Knowledge acquisition

Ten participants cited that knowledge acquisition was a critical component of their management role. Case 1 and Case 2 are firms in highly regulated science-based fields that impact human life. In assessing the two firms, it was notable that management came from technical backgrounds of pharmacy, chemistry, agronomy, and chemical engineering. Several of the employees have Ph.D. and Master's degrees in their fields. Knowledge management was a capability that managers used to inform resource allocation decisions.

The managers in Case 1 revealed that they had technical knowledge in their industry. What added value to the role of the manager was the cognitive ability to combine old and new knowledge; and the ability to combine technical know-how and acquired knowledge on the industry, environmental factors, and the signals in the socio-political environment. The combination of this knowledge gave managers the ability to make the right decisions on profitable opportunities and the combination of assets required to capture those opportunities.

Case 2 put emphasis on how technical know-how was critical as they dealt with issues of human life. The additive for Case 2 was that all senior managers were required to have a Master of Business Administration degree to encourage the integration of technical know-how and business management. This combination was attested as the key ingredient that helped the firm reconfigure and launch new business models in response to the dynamics of their industry.

What has emerged is that path dependency, as highlighted by Pandza and Thorpe (2009), was notable in Case 1, which is managed on traditional hierarchical lines. The managers' idiosyncratic actions in accumulating knowledge and understanding of the sociopolitical environment support their ability to lobby industry bodies and the government to support their strategic initiatives to seize opportunities and mitigate threats. Case 2 responses and the demands for scientifically skilled managers to attain business knowledge support the literature on path dependency. For Case 2, they have been able to reinvent the business model three times, from brake fluid to cosmetics, and eventually generic drugs. This is driven by the entrepreneurial orientation of the firm.

However, the use of accumulated knowledge in both Case 1 and Case 2 can be seen as a dynamic capability, but it falls short of being a higher-order dynamic capability. As Teece and Associates postulated, higher-order dynamic capabilities result from knowledge acquisition that creates new and novel products. Case 1 and Case 2 highlighted that their products are innovations, add-ons, which are the result of tapping into exogenous diffused scientific know-how and technologies. Case 1 evolved through a period of agricultural disruptions and through a process of reconfiguring physical assets and human resources, they were able to bring in innovative fertiliser products to supplement traditional cereal grain fertilisers that were the core of their business. For Case 2, they were able to redesign their business model from the manufacture of brake fluid to the manufacture of generic drugs. Managerial cognitive capabilities is idiosyncratic, and the cumulative knowledge managers in Case 1 and Case 2 may be said to be tacit and hard to imitate, which gives them the dynamic capabilities to use their combined technical and business knowledge to drive firm renewal, a state that is supported in the literature (Pandza & Thorpe, 2009; Teece, 2020).

6.4.2.2 Selecting Enterprise Boundaries

The decisions that management makes look at how processes and procedures work within the internal environment, where assets need to be carefully calibrated to work in a way that is efficient and produces the best quality products (Teece, 2007). Radical changes in technologies such as digital manufacturing, computer-aided design, and machine learning are changes in various environments that make firm asset combinations redundant or obsolete (Zeng et al., 2017). Managers in Case 1 highlighted the need to regularly engage a consultant to de-bottleneck and redesign their manufacturing plants. The managers in Case 2 attested to the cost of maintaining current and 'good manufacturing practices' and that if the firm does not update the plant and equipment, they will lose certification for drug licenses, which will hinder Case 2's ability to export. The evidence from the research showed that the two Case Firms converged in capabilities that support seizing and capturing opportunities by having highly routinised processes and procedures (Eisenhardt & Martin, 2000). The literature highlights the importance of seamless processes and procedures, integrated with up-to-date automated and computerised machinery. However, these process capabilities are in the domain of homogenous ordinary capabilities because competition can buy these capabilities and what competition can buy cannot create a competitive advantage over time (Eisenhardt & Martin, 2000).

6.4.2.3 Delineating new products and new markets

New product development is not just about taking a product and launching it into the market. The seizing and capturing capability is enhanced by the firm's ability to decompose and reconstruct products to suit the market in which the products are sold (Teece, 2018b). Decomposing entails breaking down and understanding the molecular structures and how they work. The managers in Case 1 and Case 2 demonstrated how they decompose market structures by customer segments and competition, especially when entering new markets, to ensure the product-market fit and the product-pricing fit before committing financial and human resources to the new product. This decision criterion speaks to the co-packing strategy that Case 2 implemented on one of its products and how Case 1 introduced a specially designed macadamia fertiliser meant for one farmer that has now been launched into the broader market due to the success the product has had on the crop yield metric. To a large extent, the capability to delineate products and markets can be viewed as an ordinary capability. As Participant 9 Case 1 aptly put it, when they do not make the first move, advantage competitors will move in and capture the same opportunity. This opinion is supported by a body of literature on dynamic capabilities (Teece, 2007; Teece, 2018b; Winter, 2003)

6.4.2.4 Delineating business models: Products and new technologies

There are instances when breakthrough products challenge the firm's existing capacities to change the firm's business model (Teece, 2018a). These breakthrough products can reveal gaps in the business model, exposing the firm to competition or losing market share from complement products. Closely related to product innovations is the impact of new technological developments that rapidly change the firm's resources and asset structures. Consequently, for manufacturing firms to seize the emerging opportunities, there must be an orchestration of asset recombination and resource reallocation (Lee et al., 2021; Zeng et al., 2017). Furthermore, manufacturing firms can acquire higher-order capabilities of firm design through network effects and creating a network of partners and complementarities that support the firm's resource base (Fainshmidt et al., 2019).

Case 1 changed the business model of its core granulated fertiliser products by investing in new plants and technologies that enabled them to respond to the demand for higher-analysis fertilisers. These new technologies meant acquiring new human capital skills, new knowledge, and combining these technologies with competencies they already possessed. This ability to recombine different competencies, tangible and intangible assets, is called co-specialisation.

Case 2 managed to deploy higher-order capabilities to seize opportunities emerging in the control of communicable diseases by capturing co-specialisation economies. They deployed the synchronised combination of acquired intellectual property, human capital capabilities, and tangible and intangible assets to create new business ventures in generic drug manufacturing as they pivoted off their capabilities in cosmetic manufacturing.

For both Case 1 and Case 2, at the heart of the delineation of business models is the antecedent of heterogeneous intangible and tangible assets that cannot be imitated. Examples of these assets are internally developed fertiliser compounds, and human capital brings intellectual know-how to that integration with technology, which is a dynamic capability that creates competitive advantage (Girod & Whittington, 2017).

6.4.2.5 Flexibility and adaptation to change

Seizing involves the firm's responsiveness to opportunities and threats and how it acts quickly to restructure or renew its resource base (Teece, 2018a). Dynamic capabilities require management teams to sense key developments and trends, formulate a timely response, and guide the firm through uncertainty and change. Flexibility and adaptability was one of the themes in which managers converged and agreed that flexible adaptability was needed to maintain profitable operations. Managers in Case 1 and Case 2 have been coordinating their firms through different phases of firm trajectories. Case 1 managed to change during times of

turbulence and coordinate staff to adapt to new training regimes that allow employees to be equipped with a variety of skills which allows reassignment to different areas. Managers in Case 2 demonstrated cognitive abilities to coordinate employees and their scientists to repurpose the knowledge they had from manufacturing brake fluid to personal care products and eventually generic drugs. Both companies had the aim of renewing the asset base and continuing to operate in the unstable environment and avoiding firm collapse (Manfield & Newey, 2019)

6.4.2.6 Incentives for seizing and long-term opportunities

Managers in Case 1 and Case 2 highlighted three distinct sub-themes that gave the Firms the motivation to change and adapt to changes in the macroeconomic environment. First, environmental dynamism is a contextual factor that impacts how a firm deploys dynamic capabilities over time (Manfield & Newey, 2019). Secondly, firm managers find motivation in developing new products and deploying them in new markets. Thirdly, one-way higher-order capabilities are experienced when firms can change the direction of whole industries with their innovative ways (Helfat & Peteraf, 2015).

The three propositions in the literature to deploy dynamic capabilities to some extent support the incentives to seize long-term opportunities. To some extent, Case 1 navigated the structural macroeconomic changes that were brought about by the Zimbabwe land reform programme and brought in new products to the new market. Case 2 was able to navigate regulatory pressures and left the market for communicable diseases to develop a new product for pain management. However, for both Case 1 and Case 2, capturing innovations that change industries is not a capability that they possess. They are still facing competitive rivalry and threats from substitute products. The deployment of dynamic capabilities that alter industries is expensive and time-consuming. For firms operating in resource-scarce macroeconomic environments, this is coupled with uncertainty. The best strategic fit is a low-cost strategy, which is what the two case firms have implemented. This is corroborated by Fainshmidt et al., (2019).

6.4.2.7 Flexibility and adaptability to new changes

In the seizing capability, managers will reach into the knowledge accumulated toolbox to collaborate and engage in knowledge sharing activities (Pandza & Thorpe, 2009). Changes that impact firms are also those that are pushed through the regulatory environment (Teece, 2020). The managers in Case 2 highlighted how the frequent changes to treatment guides imposed by the World Health Organisation require them to constantly evolve and change their R&D protocols, the procurement of active pharmaceutical ingredients, and the IT technologies

that evaluate and test their drugs. The regulatory frameworks threats that impact them include the local Medicines Control Authority and all the country authorities where their drugs are registered. Therefore, changes that occur in all these jurisdictions require flexibility to reconfigure the firm's assets and respond to changes and maintenance of export markets. The requirements for Case 2 to implement dynamic capabilities for flexibility and adaptability confirmed the literature on companies that enter export markets (Teece, 2018a).

Case 1 went through major operational and viability challenges in the early 2000s when a new management team was appointed. Participants 5 and 9 recounted how they had to make hard decisions about how to manage their operations in the face of a shrinking market and high manufacturing overheads. Through flexibility, adaptability, and improvisation the firm did not make any redundancies but downsized through natural attrition and unique way of making small incremental adjustment until they achieved the right firm size.

The ability for Case 2 to be flexible and to adapt to constant changes in science and technologies, and Case 1 to be flexible to reconfigure its assets while downsizing in order to sustain the company, demonstrates resilience. Resilience is evaluated as an outcome of the dynamic capability of managing problem solving and the cognitive ability of managers to sense when radical reconfiguration is required in the firm's resources to meet the demands of customers or meet organisational change.

The two case firms also demonstrated that dynamic capabilities are part dependent and that managers must develop unique cognitive skills that address the challenges in their context. The two case firms also showed that even though firms are operating in the same environment, the experiential learning and management of resources are different (Haarhaus & Liening, 2020).

6.4.3 Strategic Alliances and Partnerships

An alliance or partnership is a vehicle that enables the firm to acquire resources, technologies, and access to markets (Teece, 2020). Knowledge can be obtained from R&D, alliances with external parties, and formal collaborations in externally developed technology. Strategic partnerships are relationships that can be formalised by a business contract, while strategic alliances are more informal and do not require a formal contract, but rather an agreement to pursue a common objective. Firms in an alliance remain independent from each other (Giudici et al., 2018). However, as much as these arrangements give the firm access to the resource, they need calibration to ensure they are an excellent profitable strategic fit for the firm.

For example, in their strategy document, Case 1 highlighted the need to revisit partnerships so that they can derive value and exploit new market segments. Most of their partnerships

were noted in supply chain and logistics management services. Case 2 mentioned that they had established alliances with export companies in two Asian countries and a local manufacturer. In South Africa, Case 2 has registered drugs that an alliance partner manufactures on their behalf for that market. This allows them to capture large government tenders that they would not have access to as a Zimbabwe company. However, they noted that some of these arrangements came at the cost that they had to delineate product architectures to ensure the products were viable and profitable in the markets they serve.

In strategic alliancing and partnerships, Case 2 demonstrated higher-order dynamic capabilities that have allowed them to capture the export market through co-specialisation of tangible and intangible assets with alliance partners. They bring the technical know-how, WHO certifications for the drugs, and the R&D innovations, while the alliance partner brings the manufacturing assets to the table. This is corroborated in the literature and supported as a strategic option for asset recombination and firm renewal (Teece, 2018b). However, Case 1 showed ordinary capabilities that are a prerequisite for any manufacturing company to manage supply chain relationships, collateral managers, and logistics partners.

6.4.3.1 Strategic joint venture

The case firms in this study had no history of entering joint venture arrangements. However, as discussed in Sections 5.4.1 and 5.5.2, Case 1 has explored emergent opportunities in crop production. Their strategy document highlights that they have identified potential partners and are implementing a strategy to capture these opportunities by 2023 (Case 1, 2021).

6.4.4 Conclusions for research question 2

In conclusion, the main finding was that Case 1 and Case 2 displayed dynamic capabilities in knowledge acquisition that supported the distinct characteristics of the two firms and the organisational cultures in deploying dynamic capabilities to capture opportunities by combining internal know-how and external knowledge (Zeng et al., 2017). The second finding was that Case 1 and Case 2 deployed the seizing capabilities by developing the capacity to navigate the macroeconomic environment, introduce new products, and capture new market segments. Finally, knowledge assimilation equipped managers and employees with adaptive capabilities, flexibility, and adaptability to change in an uncertain environment. In Case 1, these capabilities anchor developing experiential and creative learning; and the flexibility to resolve problems (Pandza & Thorpe, 2009). At the same time, in Case 2, teamwork contributed to flexible and adaptable behaviour of firm employees.

However, they exhibited limited impact in deploying dynamic capabilities that changed the landscape of their industries. They managed to mitigate the risks associated with competitive rivalry that emerged as a theme under environmental dynamism.

Therefore, the existing literature draws our attention to comparing firm heterogeneity and homogeneity (Nayak et al., 2020). The two case firms showed convergence and an orientation supported by literature in knowledge acquisition, exploitation of science and technologies, and flexibilities and adaptability, which strengthens how they deploy dynamic capabilities. They also display deliberate actions to pursue low-cost strategies, which is a strategic fit for firms operating in resource-scarce environments. However, they showed weaker abilities in the area of strategic initiatives that challenge and change.

6.5 Discussion: Research question 3

RQ3: *In what ways is knowledge assimilation a key capability of managers operating in unstable macroeconomic environments?*

6.5.1 Introduction

The research question aimed to discover idiosyncratic cognitive and noncognitive behaviours of the organisation that can be defined as unique and nonreplicable (Nayak et al., 2020; Teece, 2018a). The dynamic capabilities of a learning organisation are hard to imitate and therefore the foundations of competitive advantage (Lee et al., 2021; Pal et al., 2014) will strengthen the firm’s ability to acquire new knowledge and use it to meet the firm's commercial objectives (Conboy et al., 2020).

6.5.2 Knowledge management and integration

The 'knowledge management capacity' is the firm’s ability to transform its resource structure and realign to meet the demands of its customers and strategic focus by exploiting internal knowledge and combining it with externally acquired knowledge (Teece 2020). The theme was one of the most grounded, with 17 quotations from 11 participants in the study. The grounding reflected the managers’ views about how important knowledge management is as a capability that supports asset recombination. Knowledge sharing integration and transfer for management are to allocate know-how to a more extensive network of employees in the firm who have the competencies to implement the change (Teece 2016). Management must create an enabling environment for learning associated with the firm’s flexibility and ability to implement change. For example, the combination of old and new knowledge was a critical factor when Case 2 changed from cosmetics to pharmaceuticals. The managers in Case 1 highlighted how old knowledge was used to exploit mature markets, such as rural maize

farmers, instead of discarding them and moving to the high-analysis fertilisers that the more sophisticated farmers have adopted. The findings for managing old and new knowledge support the assertions that this is a transformation capability of the firm (Teece, 2020). Within the knowledge management frame, managers highlighted that it was not enough to just acquire knowledge, but learning orientation modified the behavioural actions of managers as discussed in the two sub-themes below.

6.5.2.1 Learning Orientation

The firm's learning orientation is a path-dependent capability that is idiosyncratic and starts with the firm's ability to acquire and accumulate up-to-date, relevant information that it uses to create new products, new markets, and new ventures (Pandza & Thorpe, 2009). This knowledge is creatively sought creatively with strategic sense making, leading to experiential learning. The dynamic between learning and knowledge progression will help managers cope with technological change and environmental dynamism (Ferreira et al., 2020). In the findings, Case 1 managers reported experiencing high human capital attrition that affected knowledge management. When colleagues leave the organisation, there is a vacuum that is left, and time is taken to recruit new talent, and then to train the new incumbent in the highly patterned routines of the organisation. Case 2 demonstrated lower attrition rates with managers noting that people do not leave the organisation, they stay, with technical incumbent managers having tenures between 17 and 25 years in the organisation. The implications are that knowledge that has been acquired by individuals by nature becomes not replicable and idiosyncratic, and competitors will find it difficult to copy an organisation's strategic outcomes because of the combined actions of its managers. This notion aligned with studies that looked at the nature of knowledge being unique and non-replicable resources of the organisation and the source of learned behaviours and actions (Nayak 2021). These knowledge management, behaviours, and actions in Case 1 give the firm capacity for managers to acquire new customer segments by engaging farmers and training them in the use of highly specialised fertilisers which they are introducing into the market. In Case 2, knowledge management and learning orientation was reflected in how the firm engaged in knowledge sharing with alliance partners in export markets. When treatment guidelines change, the generic drugs they manufacture need to be changed.

In assessing the dimensions of knowledge management, Case 1 was deploying dynamic capabilities when advancing into new customer segments with new blends of fertilisers against the competition, as highlighted in the literature (Pandza & Thorpe, 2009). Case 2 was able to extend dynamic capabilities to higher-order dynamic capabilities by accessing new markets with their know-how to advance firm performance and competitiveness.

6.5.3 Managing asset and resource recombination

The second theme that emerged in the findings was that managing assets and resource recombination requires transforming business models and capturing opportunities, requires maintaining alignment between the firm's resources and business strategy (Teece 2018). Six sub-themes of capabilities were identified by managers as essential for transforming business models and opportunities. These capabilities were considered critical for the renewal of the firm and management's ability to make long-term strategic decisions.

6.5.3.1 Managing renewal and asset reconfiguration

Manufacturing firms' managers must look at how their factories are designed proactively and reconfigure assets according to the business demands, which cannot be done overnight (Teece, 2018; Winter, 2003). Therefore, the dynamic capabilities of the firm must be tested many times to make precision adjustments to the physical structures of the firm and to renew the firm's resource asset base (Lee et al., 2021; Teece, 2018). Therefore, resource adjustments allow the firm to continue to exploit mature products while at the same time investing resources into new opportunities to achieve strategic objectives. Case 2 was able to go through periods of renewal and asset reconfiguration. They renewed the assets portfolio and reassigned human capital skills to new product development in the pain management segment after they decided to stop manufacturing specific drugs associated with communicable diseases. Entering into strategic alliances with external Asian manufacturers allowed the firm to achieve asset reconfiguration and to continue supplying the products they had discontinued in their manufacturing portfolio. This change in strategic focus and ability to renew and reconfigure their assets has already been identified as a dynamic capability, as discussed in previous sections.

6.5.3.2 Managerial cognition and co-specialisation

Managerial cognitive abilities are seen as an executive function that develops through purposeful learning and the creation of new knowledge, leading to seizing opportunities in new product development (Conboy et al., 2020; Pandza & Thorpe, 2009). This means managers leading firms in unstable macroeconomic environments can take advantage of co-specialisation when making decisions on these opportunities (Teece, 2020). For example, managers in Case 1 have found that developing internal capabilities leads to finding solutions when faced with customer demands in the development of new products, a process they have gone through as they have been capturing new customer segments with new specialist fertilisers. Furthermore, the managers in Case 1 also pointed to recruiting new skills and redeployment of skills to cater to the development of new products and the change from

outsourcing arrangements to producing product labels in-house. The literature recognises co-specialisation as a capability that enables firm asset and resource recombination - a process of taking two or three assets from other areas of the organisation and combining them to form a new asset structure for capturing value (Teece, 2007).

6.5.3.3 Managerial orientation to solve problems

Manufacturing firms that operate in unstable macroeconomic environments require dynamic capabilities for solving asset combination problems, requiring managers to be flexible and adaptive by applying heuristics of problem solving as a prerequisite that influences better strategic objectives (Bogers et al., 2019; Helfat & Peteraf, 2015). At the heart of the firm's asset renewal and reconfiguration is the direction of management to solve a strategic problem. Case 2 managers exited a mature product market in drugs for communicable diseases. This resolved the high cost of upgrading the base technology for a low-margin product. Assets augmentation was achieved through alliancing with an Asian manufacturer for low-margin products. They also implemented a new internal validation process for the new drugs they are currently developing in the pain management market segment. The problems of Case 1 of human capital attrition and loss of institutional knowledge meant they had to employ dynamic ways of reconfiguring assets and combining internal knowledge with newly acquired knowledge to meet the firm’s operational and strategic objectives. They also solved the problem of losing market share to imports by installing a new plant which they combined with the capabilities of the old plant to create new products. Therefore, the cognitive ability of management to solve problems in the transformation of assets of the firm and the recombination of resources is an imperative dynamic capability that supports the renewal of the firm. The resources that form the renewal process are the recombination of human capital resources, intellectual property capabilities, and physical assets to exploit new business opportunities and mitigate risk (Teece 2020).

6.5.4 New Product development and new markets

Transforming is about restructuring firm resources to capture opportunities that emerge in new product development and changes in business models (Teece, 2018a). What this entails is that when going through asset recombination for new product development and entering new markets, managers have to adapt resources to take advantage of market opportunities as they emerge, while anticipating technological changes and risks that may need to be managed to exploit those opportunities (Ferreira et al., 2020). The findings thus far have demonstrated the product developments for Case 1 in developing high-analysis fertilisers that are specialised for specific crops to meet the demands of new knowledgeable customers. Case 2 thus far has demonstrated product development initiatives that moved the company through various

stages of evolution from manufacturing brake fluid to cosmetics, and eventually manufacturing generic drugs. The managers in this study highlighted two internal capabilities that support and strengthen the firm's ability to develop new products and enter new market segments.

The first aspect of capturing new product developments and markets requires a well-defining of enterprise boundaries through governance and risk management mechanisms that are put in place to ensure that new product development is aligned with the business model and the resources managers deploy to capture value (Teece, 2007). The second aspect that was discussed as essential was operations management, the management of technologies, firm structure, processes, procedures, and people (Conboy et al., 2020).

However, internal capabilities for governance structures and operations management are difficult to deploy as dynamic capabilities because of the replicability nature of these competencies. Case 1 managers highlighted that they benchmark their operations and governance structures to industry standards and have consultants who instruct when to debottleneck the plant and what manufacturing technologies should be implemented to maintain ISO certification. Case 2 managers discussed that they are mandated to follow current good manufacturing practices that are imposed by the World Health Organisation as the standard body that certifies the systems and technologies they use to develop and manufacture drugs. Therefore, the findings are that both Case 1 and Case 2 have ordinary capabilities in the development of new products and markets, as this was moderated by internal capabilities for governance and risk management and internal operations management. Higher-order dynamic capabilities in these areas can only be achieved if the firm can build its bespoke systems that cannot be replicated by competition and which they can fully control (Zeng & MacKay, 2019). Managers in Case 1 and Case 2 spend a considerable amount of time ensuring that the systems are well integrated and the right human capital skills are combined for optimal performance.

6.5.5 Information dissemination

The discussion of asset and resource recombination is not complete without a discussion of human capital resources that interact to transform firm resources by capturing opportunities and mitigating risk (Nayak et al., 2020). Communication is key if managers want to develop effective engagement with employees, encourage a culture of inclusion, and invite all personnel to identify opportunities that enhance firm performance in the environment. (Manfield & Newey, 2019). The data collected from Case 1 and Case 2 revealed two themes that emerged together. The first was leadership communication styles, and the second was about employee engagement in adapting new ways and changes in the environment.

The senior executives in Case 1 have a formal and traditional approach to management and information dissemination. When there were changes that required action in the operating environment or there was the need to engage employees on issues related to firm performance, they were communicated through various traditional forums, such as MD's quarterly reports, monthly management meetings, and message bulletin boards. In contrast, the executives in Case 2 had an entrepreneurial approach to employee engagement by using the WhatsApp social media platform and productivity tools such as Microsoft Teams as part of the tools of communication that link management and employees directly. However, having different orientations does not favour one approach over the other due to the context in which the firms operate.

What is important is how they deploy dynamic capabilities of effective communication in their environment (Fainshmidt, 2016). Both case organisations identified their approaches as being dynamic, flexible, and effective in achieving their strategic goals. However, in evaluating the findings presented by the managers, managers in Case 1 lagged the dynamic way in which Case 2 engaged employees with two insights (where Participant 5 stated that it took as little as 5 days to communicate policy changes at any given time). In Case 2, Participant 6 highlighted that it takes five minutes for management to gather in the board room to deliberate on new policies and come up with a position that is communicated to all staff.

6.6 Conclusions for research question 3

The summary findings present the critical highlights. First, the transforming capability was anchored in the knowledge management capacity of the firm. Managers in both Case Firms recognised these as crucial capabilities that help in decision-making processes when exploring new opportunities and deciding on the resource allocation for products new products they want to exploit. The second finding directly related to knowledge management capability is the learning orientation of managers and their employees, which strengthens the dynamic capabilities of seizing and capturing opportunities. The results, here again, support literature on how dynamic capabilities in new product and market development can be further modified when a firm reconfigures the business model to develop new products and continues to exploit mature markets and make a profit. Finally, learning orientation enables managers to solve problems that threaten firm strategies. The findings demonstrate that knowledge, learning, and information assimilation are key components in making informed decisions on sensing, seizing, and transforming the firms resources to exploit profitable opportunities.

Other findings that the analysis considered as ordinary capacities were governance and risk management and operations management capabilities. Operational and routine processes that underpin best practice and compliance procedures are prerequisites for gaining

international certification. In addition, the literature supports the notion that these standards can be replicated and may not be a competitive source.

6.7 Discussion: Research question 4

RQ4: *How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to the firm's resilience over an extended period of time?*

This research question aims to determine how managers' dynamic capabilities have contributed to firm resilience by assessing adaptability and flexibility in the face of an unstable macroeconomic environment.

6.7.1 Organisational factors supporting dynamic capabilities

Organisational factors that affect how managers deploy dynamic capabilities are essential to consider when evaluating the foundations that support the operation of dynamic capabilities in an organisation. These foundations are at multiple levels of analysis: organisational, team, individual, or environmental levels. They facilitate or hinder the development, deployment, or maintenance of dynamic capabilities (Schilke et al., 2018).

6.7.1.1 Internal orientation and culture

The lived experiences of managers in manufacturing firms are essential to generate idiosyncratic cognitive and noncognitive behaviours that support the unique (Nayak et al., 2020). The heterogeneity of the firm is a result of the behaviours of its managers. The context in which managers work to create an enabling environment for sensing-making in a dynamic environment is influenced by these behaviours (Bogers et al., 2019). The two case firms presented evidence of different orientations in the way they operate. Case 1 exhibited a formalised and traditional approach to leading and guiding its teams. The structure is hierarchical, facilitating vertical communication in a top-down manner. Executive managers identified with the firm characteristic as facilitating innovative behaviour. Although middle managers acknowledged the flow of information up and down, the ladder was hindered. They lamented that executives should do more to listen to lower levels, as they were sources of good ideas. The strategy document of Case 1 highlighted the company's bureaucratic characteristics as a critical area of development, probably showing that the executive managers were listening to the call for change (Case 1, 2021). Hierarchical structures were recognised in the dynamic capabilities literature as hindering open communication which results in blocking deployment of dynamic capabilities (Teece et al., 2016).

Managers in Case 2 operate in a functional organisational structure with a collaborative open communication culture. They embraced WhatsApp which has been formally integrated as a communication tool, with the largest group having members consisting of the Managing Director right down to the cleaners. This form of organisation facilitates the rapid dissemination of information and facilitates firm flexibility when change is required. What was evident in Case 2 was that the entrepreneurial nature of the organisation was exhibiting formalised heuristics that give power to the dynamic nature of communication and responsiveness (Fainshmidt et al., 2019). The literature supports the view that managers who have unique social cognitive abilities to engage employees can build loyalty and commitment to change (Helfat & Peteraf, 2015).

6.7.1.2 Leadership and employee engagement

The internal orientation of the firm influences how management and employees deploy dynamic capabilities and contribute to firm resilience by implementing behaviours that demonstrate flexibility and adaptability to changes in the operating environment (Nayak et al., 2020). Communication is key to effective employee engagement, developing a culture of inclusion, and inviting all personnel to identify opportunities that support the firm's resource base (Manfield & Newey, 2019). Managers in Case 1 spoke about quarterly in-person MD briefs that were used to facilitate employee participation before COVID-19. This was augmented by monthly departmental meetings held by departmental heads. The managerial actions for Case 2 that were identified as essential for the functioning of the firm were open and direct communication. However, the degree to which employees engaged in open communication was not observed because managers highlighted their desire to see more junior employees making contributions to firm initiatives. Although communication heuristics are ordinary capabilities, in the literature scholars encourage effective employee engagement because it creates an inclusive culture and enhances collaborative behaviour. These two ingredients help deploy dynamic capabilities for firm competitiveness (Manfield & Newey, 2019).

6.7.1.3 Entrepreneurial spirit

The entrepreneurial orientation of the firm was defined by scholars as the ability of management to create new products, new markets, and the ability to seize or capture the capacity to create new pathways and enter new markets (Bitencourt et al., 2020). Additionally, entrepreneurial managers implement processes and encourage strategic practices that help the firm identify and launch new products and new ventures (Ferreira et al., 2020). The depiction of the entrepreneurial spirit of the firm described by the scholars was observed in both Case 1 and Case 2. Managers in both firms were able to deploy new innovative products

in the markets they operate both locally and regionally, and they were able to acquire new customer segments. This firm behaviour is in line with dynamic capabilities deployment as posited by Ferreira and Associates. However, Case 2 had a more profound heritage in driving the entrepreneurial vision of the firm, which evolved through different terrains from manufacturing brake fluid and then pivoting to cosmetics, and finally capturing the generic pharmaceuticals market. Case 2 seems to have deployed higher-order dynamic capabilities of evolutionary fitness, which is critical to maintaining growth and competitive advantage (Teece, 2018b). Evolutionary fitness is a concept that came as a surprise during data analysis.

6.7.1.4 Internal learning and flexibility

The learning orientation of the people in the company motivates change and a flexible culture (Zeng et al., 2017) that transforms behaviours and activities (Teece, 2018b). The managers in Case 1 identified internal learning as critical to the firm's development of adaptive and flexible behaviours. There was a sense that although their business was driven by science and technology, what was critical was that managers and employees had the right attitude towards the firm's objectives. Managers in Case 1 also emphasised the need to go beyond technical knowledge orientation and encourage employees to engage in developing capabilities that use their learned experiences in resolving operational challenges and managing change. In Case 2, managers emphasised the culture of teamwork, collaboration, and adaptability to new changes and guidelines. They highlighted that the nature of the industries they operate in is dynamic and that there are frequent changes to treatment guidelines and the respective processes and procedures. Adaptive behaviours and flexibility can help a firm establish a culture of changeability and cooperation. To this extent, the internal learning orientation that strengthens the fitness of the firm in Case 1 and Case 2 is comparable to the learned orientation capabilities exhibited by manufacturing firms in China that were going through technological changes in their environment (Zeng et al., 2017).

6.7.1.5 External technologies, resource base and asset alignment

The firm must have mechanisms to continuously evaluate and renew the firm's human resources structures so that there is a alignment of assets that provides the strategic fit and the combination of assets of the resource base (Ferreira et al., 2020). Adopting flexible structures that consider external environmental factors that affect the firm while making internal adjustments to the resource base achieves cost efficiencies in resource-scarce environments (Fainshmidt et al., 2016). For Case 1, managers indicated that they achieve resource alignment between technology and human capital by implementing effective internal training and tapping into the know-how of external partners to increase institutional knowledge, which supports the development of cost-efficient capabilities. Case 2 pointed out that one of

their valuable resources that underpins their internal R&D and compliance structures is human capital. They pointed out that some of their Ph.D. employees are in the compliance department. To that extent, the literature attests that to gain strong resilience and flexibility in responding to frequent environmental shifts and technological changes that impact the firm's resource base, the firm must define policies and procedures that can support dynamic capabilities (Fainshmidt et al., 2019). Managers in Case 1 and Case 2 indicated that alignment of the resource base with internal processes and compliance standards is what makes customers trust the quality of their products.

6.7.1.6 Strategic orientation

Strategic orientation, environmental dynamism, and resource abundance or scarcity impact how dynamic capabilities are deployed for competitive advantage by firms (Fainshmidt et al., 2019). Managers in dynamic environments have the task of selecting the strategy that is a fit between the resources available to the firm and the performance outcomes the firm is targeting for long-term survival (Manfield & Newey, 2019). Managers in Case 1 and Case 2 discussed their strategic orientation to low-cost strategies that are suitable for the markets they serve and the financial resources available to the firm for use in exploiting opportunities and deploying new innovative products. The deployment of dynamic capabilities in unstable markets can be contrasted to deployment in advanced economies with resource mobility, where firms must deploy higher-order dynamic capabilities that change the nature of dynamic capabilities to gain a competitive advantage. Research has shown that firms in resource-scarce environments perform better when they pursue a low-cost strategy (Fainshmidt et al., 2019). Furthermore, low-cost strategies are more cost-effective when deploying dynamic capabilities compared to differentiated and niche market strategies that require more resource investment for the firm and deployment of higher-order dynamic capabilities to be ahead of the competition. Therefore, Case 1 and Case 2, demonstrated the right strategic fit for the environment in which they operate according to the propositions of the scholars.

6.7.2 Environmental factors that support dynamic capabilities

Two factors that support the firm's ability to develop and deploy dynamic capabilities were identified inductively from the interviews and identified as playing a capacity building role for firms operating in an unstable macroeconomic environment. First, external science and technologies can help the firm build capabilities that develop and support dynamic capabilities (Teece, 2020). Second, associations and standard-setting bodies were identified as the main catalysts for setting boundaries for industry participation for the firm, and these boundaries are sources for developing dynamic capabilities when firms manage to influence the regulatory framework in the industry to their advantage (Fainshmidt et al., 2016). Scholars have

suggested that interactions with standard-setting bodies are a way to develop regulatory relationships and foster government ties that can strengthen the firm's influence and support of its efforts (Fainshmidt et al., 2016).

The two case organisations showed different strategies for environmental engagement. Case 1 reflected a deeper engagement with the international associations, which helped them to tap into scientific know-how and technical knowledge from international organisations such as the South African Fertiliser Manufacturers Association, CropLife, and BASF, which strengthened new and innovative product development capabilities. They also engage government and industry associations to lobby for better policies for the fertiliser industry in Zimbabwe. Case 2 discussed tapping into science and technologies for chemistry and pharmaceuticals by following trends and guidelines from the World Health Organisation and the Food and Drug Association of America. One of the interesting facts that Case 2 shared was that for them to start manufacturing a certain class of drugs that were still under patent, they lobbied through the Government and WHO to evoke a section of the World Trade Organisation provisions to get the licenses required, and at the time the class of drugs became one of their best-selling products. Therefore, the lobbying capability was seen to offer support to the firm in deploying dynamic capabilities.

6.7.3 Environmental factors that impact the outcomes of dynamic capabilities

When there are frequent environmental changes, managers should engage in adaptive actions that position firm resources to exploit opportunities and threats and direct the the industry trajectory (Fainshmidt et al., 2019). Participants mentioned the impact of two types of environmental factors that can trigger changes that can positively or negatively impact firm outcomes, such as profitability, firm resilience, and sustained growth. These challenges were announcements by industry policymakers and changes in the financial and monetary regulatory framework. The deployment of dynamic capabilities can enhance the problem solving capacities of managers in the face of external regulatory challenges that negatively impact the firm's internal capacity and strategic initiatives.

In particular, Case 1 was found to have developed capabilities to manage relationships with standards-setting bodies and external scientific institutions to develop capabilities that support its scientific resource base. Case 2 was more focused on collaborating and directly lobbying the government and also collaborating with industry associations in a bid to influence the formulation of policy in their industry. Thus, the capabilities of the firm can be greatly improved in resource-scarce macroeconomic environments. This was suggested by Barnard et al., (2017) as a key competency for scholars to investigate when studying Firms operating in environments with the scarce resources.

6.8 Conclusions to research question 4

Research question four uncovered the internal orientation of the firm. The most prominent theme that stood out was the firm structure and culture difference between Case 1 and Case 2. Case 2 had a dynamic entrepreneurial capability compared to Case 1, who exhibited capabilities deployed within a formal hierarchical structure. The structure and culture of the firm are part of the antecedents that managers administer to support the development and deployment of dynamic capabilities. The differences in firm orientation were heterogeneous and presented uniqueness.

Evolutionary fitness is applied to the two cases in different ways. For Case 1, industry level disruption necessitated the Firm to deploy this high-order dynamic capability to survive, which is also a resilience capability associated with bouncing back from strain and distress (DesJardine et al., 2019). They combined new and old plants and then downsized the heavy human capital base to realign with the new reality and low-cost strategic orientation. Case 2 demonstrated evolutionary fitness by deploying the higher-order capabilities of evolving through different industries from brake fluid to generic drug manufacturing.

In evaluating the organisational orientation of the two Case Firms, there were significant observations in which managers discussed the impact that environmental dynamism has on the Firm. The study identified three themes that had a significant impact on the firm's ability to deploy dynamic capability that drives the firm's strategic objectives. These were the mediating role of scientific institutions and associations in the acquisition of eternal technologies. The second theme was the role of government and standard-setting bodies, which supported the deployment of dynamic capabilities. In contrast, two challenges identified as moderators of the relationship between the Firm's ability to deploy dynamic capabilities and outcomes of resilience and performance (Schilke et al., 2018). These two challenges were policy pronouncements that negatively impact strategies and financial and monetary regulatory directives that limit the Firm's ability to maximise

6.9 Conclusions on the results findings in Chapter 6

Successful deployment of dynamic capabilities is a critical component of building resilience and sustaining growth. Thus, the study explored the lived experiences and cognitive capabilities of managers in unstable macroeconomic environments in which they engage in sense-making processes to take advantage of emerging trends in science and technology and identify profitable ventures. Second, knowledge management processes allow firms to exploit opportunities through adaptive actions of flexibility and adaptability. Knowledge management and the organisation's learning orientation were vital components in managing the firm's

resources and transforming the resource base to create resilience and sustained growth. The transforming dimensions of the firm's capabilities revealed how managers reconfigure the firm's assets to achieve strategic performance results by capturing innovations in product development, new customer segments,, and new market segments.

The significant finding was recognised as the evolutionary fitness of the firms to evolve. Evolutionary fitness allows firms to extend and modify resources to renew and create new business structures in the face of industry structural changes and the ability to evolve through different industries by creating, modifying, and renewing the firm’s asset base.

The study of dynamic capabilities has span decades and is still relevant today because, by their very nature, research dynamic capabilities will always uncover new dimensions, antecedents, and moderating factors that affect firms operating in different contexts. Furthermore, the recent literature has called researchers to carry out more robust studies that consider contextual issues (Schilke et al., 2018; Teece, 2007; Teece, 2018b).

Higher-order dynamic capabilities deviate from propositions made by (Fainshmidt et al., 2019) and (Zeng et al., 2017), that firms in resource-scarce and dynamic environments will find it difficult and expensive to deploy higher-order dynamic capabilities. Therefore, to further interrogate the phenomenon in these research findings, we must consider Teece et al. (2016). They proposed the need to develop business models that can help managers manage resource scarcity while pursuing strategic initiatives, deploying dynamic capabilities, and achieving firm resilience and sustained growth.

Chapter 7: Conclusions and Recommendations

7.1 Introduction

This chapter presents the research findings from a comparative case study on two manufacturing firms operating in Zimbabwe. The study was conducted by drawing insights from the lived experiences of managers and evaluating the cognitive capabilities they have employed to build firm resilience and sustainability (Nayak et al., 2020). Specifically, the study sought to understand how firms operating in an unstable macroeconomic environment have deployed dynamic capabilities that influence firm resilience over time, resulting in sustained growth. The framework for the study is deductively anchored in the resource-based view of dynamic capabilities theory (Teece, 2018b; Teece et al., 1997) and the theoretical conceptualisation of dynamic capabilities (Schilke et al., 2018, see section 2.8 Figure 4) which has not received much attention in conceptualising firms operating in contexts such as Zimbabwe.

7.2 Principal findings

7.2.1 Collective flexible adaptive action dynamic capabilities framework

The conceptualised framework for dynamic capabilities that is presented in this section is the outcome of this two firm case study. It draws from the primary findings of managers in the two cases under investigation by synthesising their insights with the dynamic capabilities literature. The thematic analysis and the network analysis provided a deeper understanding of areas of thematic convergence in a way that enabled key insights into how dynamic capabilities support organisational resilience in unstable macroeconomic environments (Schilke et al., 2018). The study's findings revealed that firms operating in unstable macroeconomic environments had developed specific dynamic capabilities that support resilience and sustained growth (Teece, 2007).

The framework that has been developed can be broken into four components. It starts with firm antecedents and ordinary capabilities, which create the basis for firm-level competencies that allow managers to exploit its resource base and develop and deploy the dynamic capabilities of sensing, seizing and transforming (Conboy et al., 2020). These, in turn, lay the foundation for high-order dynamic capabilities of evolutionary fitness and knowledge management (Teece, 2018b), which mediate the relationship between dynamic capabilities and *collective flexible, adaptive action* (Nayak et al., 2020), which is critical for firm resilience and sustainability and the latter is moderated by environmental dynamism, see Figure 12.

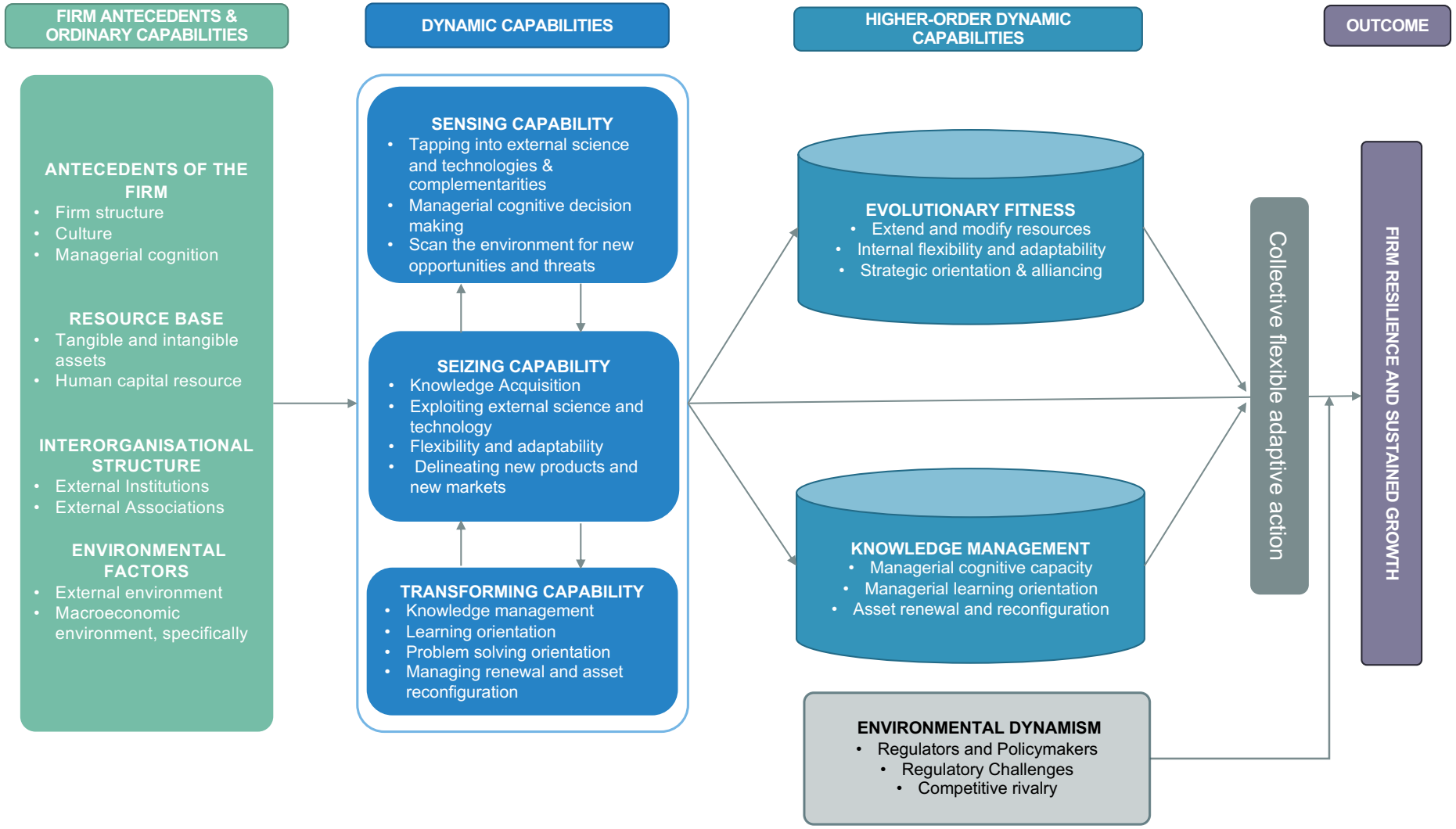


Figure 12: Conceptualised framework for dynamic capabilities

Source: Source: Author's own

This framework also allows us to answer the study's overarching research question: *How do dynamic capabilities influence organisational resilience in unstable macroeconomic environments with persistent challenges over a long period?* Drawing on the framework and the foregoing, it can be observed that they do so by creating a foundation for the high-order dynamic capabilities of evolutionary fitness and knowledge management that contribute to collective flexible, adaptive action that, in turn, allow the firm to achieve resilience and sustainability and enables it to deal with the dynamic environmental factors.

7.3 Summary of research findings

The collective flexible, adaptive action and dynamic capabilities framework highlights the need for managers to understanding the role of firm-level factors (i.e. antecedents) and ordinary capabilities in supporting dynamic capabilities. These factors, include and are not limited to organisational structure, managerial cognition, resource base, inter-organisational relationships and the environmental context that support the firm in developing and deploying dynamic capabilities (Schilke et al., 2018; Teece, 2018b).

The second element of the framework provides underscores how managers in the study deployed the three dimensions of dynamic capabilities: *sensing*, *seizing*, and *transforming* as foundational to managing the firm's assets. The resource-based view of dynamic capabilities supports this interplay between managerial capabilities, and the firm's resources as the only way of achieving resilience and sustainability (Helfat & Peteraf, 2015). These dynamic capabilities allowed case firms to scan the environment for new opportunities and threats by tapping into information from the internal and external environments through sensing-making techniques. The decision processes for seizing and *delineating new products and new markets* thereby capturing the right profitable opportunities influenced the managers' knowledge acquisition and their selection of technologies to capture and integrate with current structures. Decision-making processes require *flexibility and adaptability* through the firm's cognitive learning orientation and knowledge management abilities. These capabilities lead to *transformative problem-solving* decisions to meet customer demands, implement new business models and enter into new ventures (Fainshmidt et al., 2016).

In developing the cognitive capacities to problem-solve for organisational changes, the firms evolved through various strategies, which literature calls *evolutionary fitness* (Nayak et al., 2020; Teece, 2018b). In the framework, evolutionary fitness and knowledge management mediate and strengthen the relationship between dynamic capabilities and contribute to collective flexible adaptive actions of the firms' members which are vital in firm resilience and sustainability.

To implement strategies and reconfigure the firm's assets requires flexibility and adaptability and managers need to possess the cognitive capacity to combine institutional know-how and new external knowledge (Nayak et al., 2020). Finally, the managers who orchestrate collective flexible adaptive actions, together with asset renewal, have a better chance of achieving their goals to build resilience and sustain growth in unstable macroeconomic conditions (Teece, 2018). Therefore, the collective flexible adaptive action framework on dynamic capabilities presents practitioners with an understanding that firm resilience and sustainability can be achieved by exploiting knowledge management and evolutionary fitness capabilities through extending and modifying the firm's resources, which allows them to manage the challenges that arise from environmental dynamism.

7.4 Theoretical contribution

The study contributes to the understanding of how firms in unstable macroeconomic environments develop dynamic capabilities that lead to firm resilience and sustainability. It does this by deepening the dynamic capabilities theory and the resource-based view of the firm (Teece et al., 1997). It extends the resource-based view by emphasising how firms in resource-constrained environments can gain a competitive advantage over their competitors by managing their resources and assets. By factoring in dynamic capabilities, the firm can further create, extend, and modify its resources continuously (Winter, 2003) and achieve internal collective flexibility and adaptability through the emergent high-order dynamic capabilities, of evolutionary fitness and managerial cognitive capacity and learning orientation (Fainshmidt et al., 2019).

The study introduces a vital mediator, *collective flexible, adaptive action* that is an outcome of the high-order dynamic capabilities of evolutionary fitness and knowledge management (Nayak et al., 2020; D. Teece, 2018b). This collective flexible and adaptive action allows the firm to not only deal with the moderating effects of environmental dynamism but is critical for the firm to achieve resilience and sustainability (Conboy et al., 2020). The study also extends dynamic capability theory by focusing on how dynamic capabilities are an outcome of managers' lived experiences in firms operating in unstable macroeconomic environments in a low-income country. It does this by capturing the role of cognition and learning orientation in the high-order capability of knowledge management that mediates collective flexible, adaptive action (Giudici et al., 2018; Teece, 2020).

The study also diverges from the literature that suggest that firms in resource scarce environments would find it hard to deploy higher order dynamic capabilities because they are

expensive to deploy (Girod & Whittington, 2017) In contrast to the literature it found that entrepreneurial orientation had a weak relationship with dynamic in emerging market companies (Bitencourt et al., 2020).

7.5 Implications for management and other relevant stakeholders

Managers and practitioners have always tried to understand how they can enhance capturing value through strategic initiatives that sustain resilience and capture superior firm performance in unstable macroeconomic environments. The dynamic capabilities framework supports the call made by scholars of developing models that aid managers in understanding the importance of deploying dynamic capabilities, that can be exploited in decision-making processes (Teece, 2020). These allow managers to define and to guide their sensing, seizing and transformation of corporate resources to execute strategic initiatives.

Secondly, strategic management has always faced the problem of weighing and delineating business models to evaluate which profitable ventures have the most significant potential for profit and long-term investment (Teece, 2018b). Managers in the participating firms emphasised the need to carry out comprehensive project appraisals to ensure they exploit incentives that mitigate the risk of rent dissipation and decision-making errors (Manfield & Newey, 2019). The collective actions of managers confirm an extended theory that develops firm-specific heterogeneity. The managers in the two case firm study debunked propositions made by Eisenhardt and associates that an uncertain and unstable environment requires simple, highly routine capabilities to support firm performance (Eisenhardt & Martin, 2000). Managers in the study demonstrated that their cognitive and non-cognitive behaviours were heterogeneous both at the unit and firm levels and were an integral part of high-order dynamics capabilities.

The third implication for management is that the evolutionary fitness of the firm and the entrepreneurial orientation of the collective adaptive actions of managers can create and deploy higher-order dynamic capabilities that orchestrate firm renewal by modifying and implementing new business models, exiting mature products and entering into alliancing agreements that support and argument the firm's resource base (Ferreira et al., 2020).

7.6 Limitations of the study

7.6.1 Length of the study

Research rigour was employed by collecting comprehensive, rich data to address a complex phenomenon (Tracy, 2010). Research rigour is achieved when the researcher has time to carry out iterative and reflexive processes of gaining a deep understanding of the data. A

deeper understanding of the data helps the researcher develop codes that accurately investigate the phenomenon, which helps to achieve data consistency and results in dependability (Tracy, 2010). These limitations to research questions were mitigated through deductive coding, and using existing theory, although researcher bias cannot be eliminated entirely. Time constraints arose due to participants' unavailability when data collection commenced at the beginning of August 2021.

7.6.2 Code development

Code development started with deductive thematic analysis, which lay the foundation for code development using the seven-phase approach (Friese et al., 2018). Although the approach is consistent with similar studies, deductive coding does not allow for divergent insights and might limit creativity. However, since the focus of this study was to understand relationships between concepts, the deductive approach did not compromise the objectives of the research.

7.6.3 Participant bias

Participant bias is a limitation that can impact the level of participation that a participant affords. This bias was observed in two forms; the first was that some lower-level manager participants expressed concerns about sharing the depth of information. Secondly, participants wanted to know whether comments about colleagues they invariably mentioned would be published. Assurances were given to interviewees that names and identifiers would not be used in the report and that the commitment given in the consent form to the organisation and the individuals meant they were assured of anonymity (Morrow, 2007).

7.6.4 Research transparency and replicability

The research was conducted in a specific context, which means that the results of the findings of the study may not be replicable in other developing economy contexts or emerging market contexts, let alone developed economy contexts (Gibbert & Ruigrok, 2010). Secondly, the study was on the actions of managers in highly regulated scientific industries. The results mean that research findings for managers operating in other manufacturing contexts may vary from the findings presented in this report. Data will be stored with clear labels in and without identifiers for ease of future access and transparency (Gibbert & Ruigrok, 2010). However, prominent scholars have proposed that researchers should not disregard studies on dynamic capabilities due to the variances of contextual outcomes but encourage rigour and precision of the tested variables or investigated phenomenon (Schilke et al., 2018).

7.6.5 Suggestions for future research

At the beginning of the study explored literature that highlighted of the heterogeneity of the firm and how the inimitable nature of the firm will make it hard for competition or new entrants to replicate (Nayak et al., 2020; Teece, 2018b). The study results did unearth heterogenous nuances in the data that was collected. The differences in managerial orientation were observed in the way senior managers communicate and coordinate their teams. Further study is required to empirically measure to what extend does firm heterogeneity exist in manufacturing firms in an unstable macroeconomic setting or whether heterogeneity was contextual and only observable in these two case firm (Pandza & Thorpe, 2009).

The second area of research is to empirically test the results that have been presented in the conceptualised model of the dynamic capabilities model — this would respond to Schilke et al. (2018) who urged researchers to identify potential mediators that influence the relationship between the dependent and independent variables. We propose that evolutionary fitness mediates the relationship between dynamic capabilities and resilience and sustainable growth. Future research should test the validity and generalisability of these findings.

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Appendices

Appendix 1: Participant Interview Guide

<table>
<tr><th>Research Questions</th><th>Interview Questions</th></tr>
<tr><td colspan="2">Overall Research Question:
How do dynamic capabilities influence organisational resilience in unstable macroeconomic environments with persistent challenges over a long period of time?

The topic of dynamic capabilities has been widely researched on firms in advanced economies situate in stable macro conditions. My research interest is to uncover dynamic capabilities of firms that have managed to survive and with resilience in Zimbabwe's volatile and uncertain macroeconomic environment. The purpose of the study is to gain deeper insights into the antecedents of dynamic capabilities and the adaptive actions of individuals who are in the case organization. Please note that I have guaranteed that all participants will not be identified by name in the research report.

Opening Question:
Would you like to give me a brief description of your role and how long you have been with the organisation?
Note: Organisational resources refer to capital structures, human capital, intellectual property, marketing resources and physical assets such as plant and machinery.</td></tr>
<tr><td>RQ1:
How do managers in manufacturing firms identify opportunities in the macroeconomic environment that inform decision-making and give rise to firm performance?</td><td>1. Describe the ways in which strategic business teams track new trends and patterns in the internal and external business environment?
2. Describe to me how you decide which opportunities that are profitable and how do you pursue the new opportunities?
3. How do you recognise threats that may negatively affect your business strategies?</td></tr>
<tr><td>RQ2:
What decision criteria inform the restructuring of an organisation's resources to achieve strategic business objectives?</td><td>1. What decision criteria do you use to inform decisions on new technologies, assets and reallocation of resources in an unstable environment?
2. When there are new policies, statutory instruments and directives that disrupt current business strategy, how flexible is the organisation in adapting to the new changes and redesigning itself?
3. Do you have external partnerships and alliances that supported your resource base in creating value?</td></tr>
</table>

Research Questions	Interview Questions
RQ3: **In what ways is knowledge assimilation a key capability of managers operating in unstable macroeconomic environments?**	1. Is knowledge acquisition a key component of organisational decision making? 2. In what ways, do you combine old knowledge and new acquired knowledge to create new products and meet customer demands 3. How much of intuition and gut feel do you use in making decisions regarding the organisation's resource structure 4. How do you disseminate information and encourage employees to quickly adopt and learn new ways of doing things when the business environment suddenly changes?
RQ4: **How have the dynamic capabilities of Zimbabwean manufacturing firms contributed to the firm's resilience over an extended period?**	1. Please describe your organisational structure. Does this structure enhance or hinder innovation? 2. How well do your employees function within that structure when responding to complex dynamic changes in the environment? 3. What competencies and skills of employees do you consider contribute to the company's sustainability and responsiveness?

Appendix 2: Dynamic capabilities codes

Table 17: Atlas.ti codes for sensing capabilities

Number	*Code colour*	*Sensing capabilities codes*
1	●	Sensing - Analytical systems
2	●	Sensing - Benchmarking and competitor analysis
3	●	Sensing - Business model innovation
4	●	Sensing - Customer knowledge and innovation
5	●	Sensing - Decision-making processes
6	●	Sensing - Developments in external science and technology
7	●	Sensing - Directing internal R&D and new technologies
8	●	Sensing - DMP intuition and gut feel
9	●	Sensing - Environmental and industry scanning techniques
10	●	Sensing - Impact of competition and complementors
11	●	Sensing - Identify new emerging technologies
12	●	Sensing - Identifying target market segments
13	●	Sensing - Internal organisational scanning techniques
14	●	Sensing - Knowledge accumulation
15	●	Sensing - Managerial cognition and capacities
16	●	Sensing - Product testing
17	●	Sensing - Profitable products and new ventures
18	●	Sensing - Sales and marketing
19	●	Sensing - Tapping complementary new ventures and new products
20	●	Sensing - Technology Fit and product innovation
21	●	Sensing - Threats - Competitive Environment
22	●	Sensing - Threats - External science and technology
23	●	Sensing - Threats - Government Legislation

Table 18: Atlas.ti codes for seizing capabilities

Number	*Colour code*	*Seizing capability codes*
24	●	Seizing - Building loyalty and commitment
25	●	Seizing - Decision-making protocols: errors
26	●	Seizing - Decision-making protocols: events
27	●	Seizing - Delineating new products and new markets
28	●	Seizing - Delineating new technologies and efficiencies
29	●	Seizing - Delineating the product and the business model
30	●	Seizing - DMP Intuition vs Technical & Scientific
31	●	Seizing - Flexibility and adaptability to new changes
32	●	Seizing - Incentives for seizing opportunities long term
33	●	Seizing - Knowledge acquisition
34	●	Seizing - Product testing selecting customers

Number	*Colour code*	*Seizing capability codes*
35	●	Seizing - Selecting enterprise boundaries, controlling platforms
36	●	Seizing - Strategic Alliances
37	●	Seizing - Strategic Alliances and Partnerships
38	●	Seizing - Strategic Joint Ventures
39	●	Seizing - Strategic Partnerships
40	●	Seizing - Technology acquisition
41	●	Seizing - Threats that undermine strategies

Table 19: Atlas.ti codes for Transforming Capability

Number	*Code colour*	*Transforming Capability Codes*
42	●	Transforming - Employee engagement and adopting new ways
43	●	Transforming - Governance and risk management
44	●	Transforming - Knowledge management and Integration
45	●	Transforming - Leadership communication
46	●	Transforming - Lean management principles
47	●	Transforming - Learning behaviours and action
48	●	Transforming - Learning orientation
49	●	Transforming - Managerial cognition and co-specialisation
50	●	Transforming - Managerial orientation to solve problems
51	●	Transforming - Managing renewal and reconfiguration
52	●	Transforming - New product development and market segments
53	●	Transforming - Operations management
54	●	Transforming - Org heterogeneity of the firm
55	●	Transforming - Org structure and function

Table 20: Atlas.ti codes for Organisational factors

Number	*Colour code*	*Organisational factors codes*
54	●	Org Factors - Management coordination and facilitation
55	●	Org Factors - Antecedent - Training and development
56	●	Org Factors - Antecedents - Team and Leadership
57	●	Org Factors - Competitive rivalry
58	●	Org Factors - Entrepreneurial Spirit
59	●	Org Factors - External technologies
60	●	Org Factors - Internal learning and flexibility
61	●	Org Factors - Internal orientation and Culture
62	●	Org Factors - Leadership and Employee engagement
63	●	Org Factors - Resource and asset alignment
64	●	Org Factors - Strategic orientation
65	●	Org Performance - Return on Investment

Number	*Colour code*	*Environmental dynamism codes*
66	●	Environmental Dynamism -Regulatory policy challenges
67	●	Environmental Factors - Institutions and Associations
68	●	Environmental Factors - Policymakers and lobbying
69	●	Environmental Dynamism - Macro economic environment
70	●	Environmental Dynamism - Regulators and Policymakers
71	●	Institutions
72	●	Institutions - Exogenous science and technology
73	●	Institutions - Moderators - Policymakers and Lobbying

Appendix 3: Informed Participant Consent Form

Gordon Institute of Business Science
University of Pretoria

Informed Participant Consent Form

Dear Participant,

My name is Agnes Ngandu, I am currently studying for a Master's in Business Administration at the Gordon Institute of Business Sciences (GIBS), and as part of my course, I am required to successfully complete a business research project.

The topic of dynamic capabilities has been widely researched on firms in advanced economies situate in stable macro conditions. My research interest is to uncover dynamic capabilities of firms that have managed to survive and thrive in Zimbabwe's volatile and uncertain macro-economic environment. The purpose of the study is to gain deeper insights into the dynamic capabilities and the adaptive actions of individuals who are in the case organization.

If you agree to this interview, **your participation is voluntary, and you can withdraw at any time without penalty**. Interview will be between 40 minutes and 60 minutes either as face to face and will be audio recorder and then transcribed. However, due to Covid restrictions you can opt to interview via electronic means such as Microsoft Teams, Zoom or WhatsApp. My commitment to you is that no identifiers or markers will be made in my research report, interview scripts and electronic storage files. All data will be placed according to the highest standards of data security available. If you have any concerns, please contact my supervisor or me. Details are shown below.

Researcher

Agnes Ngandu

Email: 20802961@mygibs.co.za

Mobile: +263 772513310

Researcher's Supervisor

Professor Johan Olivier

Email: Olivierjo@gibs.co.za

Mobile: +27 834525539

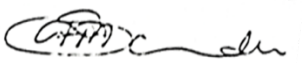
Gordon Institute of Business Science
University of Pretoria

Participant Details:

Signature: _____

Date: _____

Researcher's Details:

Signature:  _____

MUCHANYARA AGNES NGANDU

Appendix 4: Informed Enterprise Consent Form

Gordon Institute of Business Science
University of Pretoria

Informed Enterprise Consent Form

Dear Sir/Madam,

My name is Muchanyara Agnes Ngandu, I am currently studying for a Master's in Business Administration at the Gordon Institute of Business Sciences (GIBS), and as part of my course, I am required to successfully complete a business research project.

The topic of dynamic capabilities has been widely researched on firms in advanced economies situate in stable macro conditions. My research interest is to uncover dynamic capabilities of firms that have managed to survive and with resilience in Zimbabwe's volatile and uncertain macroeconomic environment. The purpose of the study is to gain deeper insights into the antecedents of dynamic capabilities and the adaptive actions of individuals who are in the case organization. In addition, I am requesting access to archival data such as historic strategy documents which are post 2008, that will be used to triangulate the data I will have collected from the case organisation.

If you approve this research, **your participation is voluntary, and you can withdraw at any time without penalty**. All participant in-depth interviews lasting between 40 minutes and 60 minutes either as face to face and will be audio recorder and then transcribed. However, due to Covid restrictions participants can opt to interview via electronic means such as Microsoft Teams, Zoom or WhatsApp. My commitment to you is that no identifiers or markers of the organization will be made in my research report, interview scripts and electronic storage files. All data will be placed according to the highest standards of data security available. If you have any concerns, please contact my supervisor or me. Details are shown below.

Researcher

Muchanyara Agnes Ngandu

Email: 20802961@mygibs.co.za

Mobile: +263 772513310

Researcher's Supervisor

Professor Johan Olivier

Email: Olivierjo@gibs.co.za

Mobile: +27 834525539

Gordon Institute of Business Science
University of Pretoria

Organisation Representative

Name: _____

Title: _____

Signature: _____

Date: _____

Researcher's Details:

Name: _____

Signature: _____

Date: _____

Appendix 5: Ethical Clearance

GIBS ETHICAL CLEARANCE APPLICATION FORM 2021/22

G. APPROVALS FOR/OF THIS APPLICATION

When the applicant is a student of GIBS, the applicant must please ensure that the supervisor and co-supervisor (where relevant) has signed the form before submission

STUDENT RESEARCHER/APPLICANT:

29. I affirm that all relevant information has been provided in this form and its attachments and that all statements made are correct.

Student Researcher's Name in capital letters:	MUCHANYARA AGNES NGANDU
Date:	23 Jul 2021
Supervisor Name in capital letters:	JOHAN OLIVIER
Date:	23 Jul 2021
Co-supervisor Name in capital letters:	
Date:	23 Jul 2021

Note: GIBS shall do everything in its power to protect the personal information supplied herein, in accordance to its company privacy policies as well the Protection of Personal Information Act, 2013. Access to all of the above provided personal information is restricted, only employees who need the information to perform a specific job are granted access to this information.

Decision:

Approved

REC comments:

Date: 28 Jul 2021